UNIVERSITY OF PENNSYLVANIA

A Method for Predicting Length of Service

INCLUDING ANALYSIS OF CERTAIN FACTORS DESIGNED TO AID IN VOCATIONAL GUIDANCE.

FRANKLIN R. CAWL

A THESIS

IN EDUCATION

PRESENTED TO THE FACULTY OF THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

PHILADELPHIA
1926

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CONTENTS

PAGE

I

The Problem 5

II

The Method 10
(a) Material 10
(b) Computations of the Multiple Ratio Correlation 13
(c) Method Employed to Analyze Factors on Application Records.. 42

III

Practical Applications and Results in Business 48

IV

Vocational Guidance Results 53
(a) The Clerical Group 54
(b) The Selling Group 69
(c) The Accounting Group 83
(d) The Engineering Group 98
(e) Occupational Comparisons 109
Appendix 119
Bibliography 140

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I

The Problem

Inventive genius has been rapidly changing our living and working conditions during the last few generations. From relatively simple conditions we have advanced to the complex. A relatively slow existence has given way to a very rapid one. Low living costs have mounted by leaps and bounds. The personal in business has been replaced by the impersonal. In fact, it seems as though the spirit of recent generations has been one that belittles the individual and attempts to minimize the value of the human element in business.

Today with refinement after refinement added to business procedure and with waste and inefficiency eliminated in thousands of places, we are being forced to recognize the fact that one of our greatest lacks is an understanding of that great element, human nature. Business has not, in the past, taken sufficient trouble to advance its knowledge of the ways and means to handle this factor, nor have the employees done a great deal to better their own understanding of the problems confronting them in these rapidly changing times.

Business men have awakened to the fact that a perfectly appointed factory cannot operate as successfully as it should if the labor turn-over mounts too high. They know that disgruntled employees do not turn out as much work as satisfied ones. They know that it takes time and money to hire and train employees and under the present system many concerns are forced to develop a constant supply of understudies. This in many cases involves courses of training within the organization or the maintenance of relations with outside organizations where new employees may be trained. This is expensive since in many cases the employee selected for the training does not remain with the concern for a period long enough to repay the cost of training.[1] Most concerns realize that to cut this expense

to a minimum better employee selection must take place and are attempting, by means of job analysis, tests and studies of the reasons why men leave their jobs, to solve the problem.

The other side of the question revolves about the individual. There is so much economic pressure for the ordinary individual to enter the self-supporting class and such a multiplicity of ways in which this may be done that it is not at all surprising that a great number make a mistake in choosing an occupation the first time and even a second time. It is natural to expect, also, that many people making such a mistake are unable to change because of the added economic responsibility brought about by marriage. Many lives are upset, homes made unhappy and consequently injustice done to a large number of people through such an unwise initial choice.

The second part of the problem would be difficult to correct through the adult, but a way should eventually be opened that will minimize the danger for the young. Aid might be given in this direction by the determination and presentation from time to time of factors that seem to make for success at that period in various lines of endeavor.

The above presentation points to the need, on the part of each business, of methods which will help it determine which individual is best suited for each opening as it is presented. On the part of the individual, there should come a greater realization of his own personal abilities and of the qualities that accompany the present-day successful individual in the type of work under consideration.

In commenting on these things one of the most recent works on personnel says:

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[1] On this point comments like the following taken from Scott, W. D. and Clothier's, R. C. book, "Personnel Management," A. W. Shaw Co., New York, 1923, are numerous in the literature of the personnel field.

"Each person who leaves his job unnecessarily in this way creates an economic loss which society as a whole must stand and, were it possible to estimate it, the amount of this in the aggregate, would be staggering."—Page 448, *Ibid.*

"Throughout the length and breadth of the land men and women are being employed and set at tasks for which they are not qualified or for which they are only partly qualified. The cost in production in industry and the cost in happiness to themselves is a total defying estimate."—Page 29, *Ibid.*

"Selection is of primary importance and the success of the other aspects of personnel administration must necessarily depend in large measure on the success with which selection is achieved."[2]

Again, we find in the same volume the following:

"The further study and analysis of occupations await careful and painstaking research on a long-time basis. The historical and personal record provided in the qualification card only suggests vague possibilities of what may later constitute valuable research in human behavior based on the influence of inheritance and environment."[3]

These statements would seem to indicate that there is a need in the field for further study that will aid in proper selection. One element of efficient selection in a great many types of employment is a determination of length of service, while another is the delineation of the factors which, at that period, accompany success in the occupation in question.

Many phases of this work have already been studied. Case after case has been recorded concerning the itinerant worker and the reason why he is never satisfied with the job he has, even though he is capable of carrying it on successfully.[4] The queer, eccentric and querulous types have also been studied[5] and men of high mentality have worked side by side with all types of workers to discover their points of view.[6] These studies have all done their share in advancing personnel administration as have studies in classifying the reasons workers give for leaving their jobs.[7] Trained interviewers have not been extremely successful, up to the present time, in selecting men who would remain a long time (when length of service seemed desirable) with their

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[2] Scott, W. D. and Clothier, R. C., *Op. Cit.*, p. 325.

[3] Scott, W. D. and Clothier, R. C., *Op. Cit.*, p. 486.

[4] Parker, Carleton H. "Motives in Economic Life," *American Economic Review*, Vol. 8, March, 1918, pp. 212–223.

[5] Southard, E. E. "The Mental Hygiene of Industry," *Industrial Management*, February, 1920.

[6] Williams, Whiting. "What's on the Worker's Mind." N. Y., Scribner, 1920, 329 pp.

[7] Bezanson, Anne. Willets, Joseph H.; Chalufour, F.; White, Leda. "A Study in Labor Mobility," *Annals of the Academy of Political and Social Science*, Sept., 1922, Vol. 103, pp. 162–234.

organization. There has also been much difficulty in pointing out the factors which accompany success at a given period of time in different types of work. Several insurance companies have made attempts to study these problems as have other individual concerns, but the work in each case is incomplete and leaves much to be desired.[8]

Tests have been devised to determine present proficiency and in some cases to predict proficiency in different occupations. Naturally this avenue of approach is important in selection work but it is only one phase of selection and at the present time is not very well organized as excerpts from a standard authority will show:

"It cannot be said that because dexterity tests are valuable in one company they are therefore valuable in all companies. It cannot be said that mental alertness tests because they have proved of value in selecting clerical workers here will be equally effective there.

When a concern employs tests in the selection of employees, it is necessary to proceed with open-mindedness and with caution.

There are a number of different kinds of tests, none of them perfect, yet most of them possessing merit of one kind or another.

Tests have been evolved to ascertain whether or not an individual possesses that kind of dexterity. In all probability then such a test will be valuable in selecting workers for that work.

This, however, is where need for caution arises. This line of reasoning is not absolute by any means."[9]

Although much has already been accomplished in the field of employee selection through studies in labor turnover,[10] job analysis and tests, the author felt that there was need for a study that would delve into the possibilities of predicting length of

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[8] (a) The Phoenix Life Insurance Co. of Hartford.
(b) Metropolitan Life Insurance Co. of New York.
(c) Equitable Life Insurance Co. of New York.

[9] Scott, W. D. and Clothier, R. C., *Op. Cit.*, pp. 94–95.

[10] The literature of personnel management has many articles concerning various phases of labor turnover, but those concerned with predicting it are extremely rare.

service[11] and would search for the characteristics which at present apparently accompany success in different occupations. The first part of this study, therefore, will propose a *method* which, within the limits set up, may be used for predicting the length of time different types of employees may be expected to remain on the job. The second part attempts to find the relationship between and the value of each of a certain group of individual characteristics by using each one, grouped in convenient intervals, as a criterion and noting the trend of each of the other variables at each step of the factor used as the criterion.

This study proposes a new *method* in the study of a troublesome problem. Whether this method will prove adequate or not will depend upon the reliability of the formulas used, the number of cases studied and the ability to obtain and measure the facts relative to the factors which influence length of service. The *results* of this study therefore should not be used unless it is certain that the conditions to which they are to be applied are the same as those used in this study and they should then be used only after due consideration has been given to the value of the empirical formulas used and the efficiency of the results obtained.

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[11] Although length of service of employees is stressed in this study as a desirable thing in many types of employment, it is understood that there are cases where long service might be desirable from the employer's point of view but very unsatisfactory from the employee's point of view. An individual with capacity should be carefully watched and as rapidly as possible trained for more responsible positions. Provided this course of training is well planned and conscientiously carried out it opens the way for each individual to grow to the limit of his capacity. While growing under such a system the individual will be happier and probably do more efficient work because he feels that progress is being made. Other things being equal the system will also tend to increase the individual's length of service with the concern. It should also be recognized that even those with limited capacities are not satisfied, many times, to continue to do one thing throughout their working careers. Things adverse to the worker should be considered as well as things favorable to the employer. The quality of service rendered may be equally as important.

II

The Method Employed to Predict Length of Service

Material

In this investigation an attempt will be made to study four types of employees. This is done in order that comparisons may be made and variations noted in different types of employment. For this purpose ledger clerks, accountants, salesmen and engineers were selected. In these four occupations we find a fairly low grade clerical type, a high, almost professional clerical type, a more or less independent producing group and a real professional class. In selecting records from which to study these groups it seemed necessary to find, if possible, a place that had all of these types in sufficient quantity to use in this study so that the disturbing factors of differently trained personnel interviewers, dissimilar facts on the record cards and dissimilar methods of collecting these facts in different concerns might be reduced to a minimum. Records of individual concerns were rejected on the ground that they might reflect office rules, regulations or working conditions and thus have undue influence on the results. To overcome these objections a search was made for records from many concerns which would contain facts comparable in type and reliability. This search proved futile and therefore the records which seemed to most nearly meet all requirements were chosen. These records were secured from a very high grade employment exchange in New York.[1] This agency employs skilled interviewers, and collects rather complete data from all applicants. Since the applicants at this agency come from New York and other cities, the sample obtained for each occupation was thought to be better than it might have been had the concern been exclusively local. Even though the foregoing precautions were taken it cannot be claimed that a

[1] National Employment Exchange, 30 Church St., New York City.

random selection[2] of material has been made because cases from an employment agency may not be representative of cases that did not pass through an agency in making job changes. Material from one agency would hardly give a random sampling of all agency material, for agencies in different parts of the country have different standards and different influences affecting them. This limitation of the material must be remembered in order that application of the results shall not be made to material not comparable to the original. Although the material has this limitation, decision was made to use it since it is the method employed that is being stressed.

The records used were those of individuals who had severed their connections with four or more concerns.[3] This stipulation was made for three reasons: first, because the time on the last job as recorded in the individual's record card (hereafter designated as criterion) was the one that was to be predicted as though it were the new one that the applicant was about to accept; second, because the times on previous jobs were to be used as variables; and third, because it was thought that by selecting applicants with at least four positions the time of rapid moving from one job to another, so often found in the early jobs, would be reduced. The selection of this group immediately eliminates the possibility of predicting length of service in the case of individuals who have just completed high school or who have not held several jobs. The system, however, does not fail because of this fact but indicates the necessity of reworking for the high school group, the group which has held one job and the group which has held two jobs. These groups are distinct from the one selected and the results are likely to be different.

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[2] Random selection of material is the selection of a part of the entire body of material under discussion which will be likely to produce, when carefully studied, results equal to or very closely approximating the results which could have been obtained had the entire body of material been used.

[3] Individuals who have severed their connections with four concerns are different from those who have severed connections with three concerns or less. This makes our group a still more selected one than was indicated before. The results of this study should not, because of this last named selective factor, be applied to those applicants for a position who have held less than three jobs. The method may be applied to those who have just left school but the particular results obtained in this study should be thought of as applying to men who have held at least three jobs.

The records were collected in nineteen hundred and twenty-three, and therefore cover the period before that time. The period had many irregularities in it due to the war. Men changed their jobs more frequently than in normal times. The men who returned from abroad were going through a period of readjustment and probably made more changes than they would have otherwise. The effect on the results of these abnormal times should not be overlooked. It is to be noted here that predictive values set up at a given period may not hold in other periods unless conditions are substantially the same.

In selecting the material for this investigation such objective factors were sought as are ordinarily developed in an interview with an applicant relative to (a) the physical side of the individual, (b) his education and (c) his business experience. In this case these factors numbered eleven. These are not the only factors that need to be studied in connection with length of service, and therefore it is suggested that other factors be added from time to time. As methods for measuring more subjective factors are perfected they, too, should be included. By this method we may in time arrive at a prediction figure which is higher than the one we have at present.

In order to check the results obtained with the material selected, other material of a somewhat similar nature was gathered. From one of the best Philadelphia employment agencies[4] the writer gathered material on clerks and salesmen. A group of clerical records was obtained from evening school[5] students. The last check group was a number of salesmen from a New York insurance company.[6] The last two groups were not taken from employment agency records, although it is possible that some of them had obtained some of their jobs that way.

If, when the method is applied to these groups, the results approximate the original, it would seem that the method might have merit and should be worked out with a larger number of

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[4] Business Service Corporation, North American Building, Philadelphia, Pa.

[5] Evening School of Accounts and Finance, University of Pennsylvania, Philadelphia, Pa.

[6] Equitable Life Insurance Company, New York, N. Y.

cases for each group in order to attempt to reach multiple correlation coefficients of greater efficiency and reliability than those obtained in this study. When higher coefficients are reached they should not be considered as absolute or final, even though the number of cases considered is great and the material quite unselected, because changing times may cause variations that were not thought of at the time of the study.

The material throughout the remainder of the discussion will be known as the material of "Group I" which includes the original records of clerks, salesmen, accountants and engineers from the New York employment agency. "Group II" will be the records of clerks and salesmen from the Philadelphia agency, while "Group III" will contain the records of the insurance salesmen and the evening school clerks.

In "Group I" the number of cases used for each occupation was as follows:

Clerks	195
Salesmen	111
Accountants	200
Engineers	188

In "Group II" the number of cases was smaller, being:

Clerks	112
Salesmen	52

For "Group III" the clerk group is small, numbering only 27, but the salesmen group is considerably larger, containing as it does 77 cases.

Computation of the Multiple Ratio Correlation

The first step in this method involves the correlation of each variable with the criterion[7] and with each of the other variables.

[7] The length of time on the last job on the individual's record card is the time to be predicted by the use of the multiple ratio correlation method and is therefore used as the criterion. The job considered as the criterion will be called the predicted job in order to distinguish it from the one held immediately before it, which, on the record card would be the second job back but in the multiple correlation method will be termed last job.

To accomplish this, a revision of the Pearson formula for computing r, as developed by Dr. H. A. Toops, was used. This revision, which eliminates a great amount of labor and corresponds perfectly with the Pearson coefficient results to the third decimal place, is described in the *Journal of Experimental Psychology*, Vol. IV, No. 6, December, 1921, under the title, "Eliminating the Pitfalls in Solving Correlation: a Printed Correlation Form."[8]

The correlation coefficients between the criterion and each variable for each type of employment is shown in Table No. 1 on page 15. It shows the variables which correspond most closely with the criterion and the variation of this correspondence between the four types of employment to be studied, but the problem of this investigation is to select a group of variables for each type of employment which will[9] be useful in predicting length of service in that work. If the elements that entered into each variable were entirely different from those entering into every other variable the task would be relatively simple, for then the weight of each variable could be determined by the size of its coefficient of correlation with the criterion. It is possible, however, that some elements of the variables in the groups under discussion are affected by elements in other variables which makes the problem one of determining the amount of correlation between each variable and the criterion when everything common to the variable under consideration and every other variable in the group have been eliminated.[10] After a correct selection of elements has been made, a weight for each one of the series must be derived. In addition the reliability and validity of the scale should be determined and the contribution which each variable in the scale makes to the final should be shown.

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[8] The Pearson "Product moment method" may be used without varying the results. The revision was used because it saves much time.

[9] The group selected will be useful to the extent that the method used is reliable and efficient.

[10] This is attended to as far as it can be by the use of empirical formulas for working partial correlations. No partial correlations as such were worked out in this study because Dr. H. A. Toops in his revision of the Pearson formulas eliminated the necessity of making this section of the work separate and distinct from the rest. Nevertheless the partial correlations of each variable that enters the multiple have been taken care of in the revision of the Pearson formulas used in this study.

TABLE NO. 1

GROUP I

COEFFICIENTS OF CORRELATION BETWEEN THE CRITERION (LENGTH OF TIME ON PREDICTED JOB) AND EACH VARIABLE

NUMBER OF EACH VARIABLE	NAME OF EACH VARIABLE	CORRELATION OF THE CRITERION WITH EACH VARIABLE							
		CLERKS		SALESMEN		ACCOUNTANTS		ENGINEERS	
A	B	C		D		E		F	
			P. E.		P. E.		P. E.		P. E.
1	Length of time on last job	.2194	±.05	.3643	±.06	.0714	±.05	.2148	±.05
2	Length of time on next to last job	.0544	±.05	.3667	±.06	.1897	±.05	.1312	±.05
3	Average time on last three jobs	.1755	±.05	.4585	±.05	.2731	±.04	.2570	±.05
4	Average salary on last three jobs	−.0348	±.05	−.1342	±.06	.0784	±.05	−.0435	±.05
5	Number of jobs held	−.1732	±.05	−.2214	±.06	.0324	±.05	.1322	±.05
6	Age	.2640	±.04	.3101	±.06	.2654	±.04	.3567	±.04
7	Height	.0718	±.05	.0190	±.06	.0511	±.05	−.1893	±.05
8	Weight	.0961	±.05	−.0722	±.06	.1657	±.05	.0938	±.05
9	Height over Weight	−.0485	±.05	.1233	±.06	−.1683	±.05	−.1252	±.05
10	Dependents	−.0025	±.05	.2033	±.06	.0030	±.05	.1244	±.05
11	Education	−.0410	±.05	−.0192	±.06	−.0545	±.05	−.0185	±.05

The Pearson formula known as the multiple ratio correlation formula might have been used to determine the above things except that the method is extremely cumbersome and involved. The Pearson procedure, however, has been greatly simplified by Dr. H. A. Toops, so that at present one may, by correctly following the operations on a form chart, derive the type of scale suggested previously.[11] Since this new method has not been published formally, the following description, by Dr. Toops, from an article by E. E. Martin in the *Journal of Criminal Law and Criminology*, 1923, Vol. XIV, No. 3, and called "An Aptitude Test for Policemen," is quoted.

"The problem of securing the *maximum* predictive value from a *minimum* number of tests resolves itself into the problem of determining that test, U, of a number of available tests, which will yield by the technique below presented a maximum multiple ratio correlation coefficient when combined at the proper weight with an already existing weighted test composite, C, which is already a maximum. This involves the determination of the correlation of test U with the composite, C; the determination of the weight, β, of test U such that when the deviations in terms of standard deviations in Test U are weighted by that amount the multiple ratio correlation coefficient, $r_{Ic'}$, of the *new test composite* at that point shall be a maximum by this method of computation.

"At the outset, that test of the 'n' available tests which correlates highest with the criterion, maximum r_{iy}, is taken as the 'backbone' test, and is thereupon named test C; whereupon the correlation coefficient r_{Ic} is a maximum at the point of *building up* a scale. If the gross scores in test C are now given a weight of 1.000, there is for any test, U, a weight $\beta_{\frac{u}{c}}$, such that when the gross scores in test U are multiplied by $\frac{\beta_{\frac{u}{c}}}{ou}$, the multiple correlation coefficient, $r_{Ic'}$, of the two-test scale correlated with the criterion shall be a maximum. But some of the

[11] The calculations necessary to the selection of the variables to enter the multiple and the building of the multiple by this method are shown in detail in the appendix.

tests, when weighted at their own individual $\beta_{\frac{u}{c}}$ weights, will yield higher multiple correlation coefficients than others. Hence, the ordinary formula for multiple correlation is solved for each of the remaining (n-1) tests in turn:

$$\text{(I)} \quad r_{Ic'} = \sqrt{\frac{r_{Ic}^2 + r_{Iu}^2 - 2r_{Ic} \cdot r_{Iu} \cdot r_{uc}}{1 - r_{uc}^2}}$$

"That test which yields the maximum multiple correlation coefficient is now called Test U. The weight of Test U with respect to Test C weighted 1.000 is

$$\text{(II)} \quad \beta_{\frac{u}{c}} = \frac{r_{IU} - r_{IC} \cdot r_{UC}}{r_{IC} - r_{IU} \cdot r_{UC}}$$

"We now consider that theoretically the gross scores on test U have been added at the proper weight to the gross scores of test C; our problem is then to find by formula the weight of a new test U′ such that when its gross scores are added to the now existing test composite, C′ (the gross scores of which are considered as now being weighted 1.000) the multiple ratio correlation coefficient shall be a maximum for all the possible remaining (n-2) tests. It is not necessary actually to combine the gross scores and compute the necessary correlation coefficients, $r_{U'C'}$, since a formula obtains the same result.

$$\text{(III)} \quad r_{U'c'} = \frac{\sum r_{U'y} \cdot W_y}{\sqrt{\sum W_y^2 + 2\sum(r_{xy} \cdot W_x \cdot W_y)}}$$

in which, $r_{U'y} \cdot W_y$ is the sum of the single-products of all the correlations of test U′ that occur *in a column*, U′, each respectively multiplied by the weight of the test, W_y, of the row for all the rows of the test composite C′ which enter into a double symmetrical intercorrelation table, which is being built up as the test composite is being built up. This test composite at this point consists of tests C and U, whence the two correlation-products are $r_{U'C}$ (1.000) and $r_{U'U} \cdot \beta_{\frac{u}{c}}$

$\sum W_y^2$ is the sum of the squares of the weights in the test composite at this time, namely, here, $(1.000)^2 + (\beta_{\frac{u}{c}})^2$

$\sum r_{xy}\ W_x\ W_y$ is the sum of all the double-products when each of the *inter-correlations of tests* in the test composite at this time are respectively multiplied by the weight of the row and column in which they are found in an inter-correlation table, namely, here,

$$r_{uc}\ (1.000)\ (\beta_{\frac{u}{c}})$$

"With this equation solved for all the remaining (n-2) variables, resort to formula (I) determines which test will yield the maximum multiple ratio correlation coefficient, r_{ic}''. This test, when determined, is called U″. The weight of U″ in the multiple ratio regression equation is given by the formula

$$\text{(IV)}\quad \beta' = \sqrt{\sum W_y^2 + 2\sum r_{xy} \cdot W_x \cdot W_y} \cdot \frac{r_{Iu'} - r_{Ic'} \cdot r_{U'c'}}{r_{Ic'} - r_{Iu'} \cdot r_{U'c'}}$$

The quantity under the radical does not enter into formula (II) for the reason that the standard deviation of the original test C is 1.000, when measured in terms of its own standard deviation. When adding on test U′ the composite C′ has a standard deviation of its own which must be considered and which this radical expression takes full account of. Equation (IV) is the perfectly general expression of the weight at which a new test U′ is added to an already existing test composite C′. By repetitions of the procedure involved in adding test U′ as above outlined, one may determine in succession the fourth, fifth, sixth tests, and so on. The multiple ratio correlation coefficient at each point is an index of the efficiency of the scale. Soon a point of diminishing returns is reached, where the addition of a test adds but little to the value of the multiple ratio correlation coefficient at that point, and the value available will approach the value which we would receive from the inclusion of the entire N tests. At this point the test can be considered complete. Any two or more of the tests can be used for the scale by always cutting off from the composite any number of the tests which are added last, whereupon that part of the multiple ratio regression will apply which is left after the exclusion of any number of tests at the right hand end of the equation. The general equation for combining the gross scores of any number of tests is:

$$\text{(V)} \quad \frac{X_I - M_I}{\sigma_I} = \overset{(r_{Ic})}{\frac{X_c - M_c}{\sigma_c}} + \beta_{\frac{u}{c}} \overset{(r_{Ic'})}{\frac{X_u - M_u}{\sigma_u}} +$$

$$\beta_{\frac{u'}{c'}} \overset{(r_{Ic''})}{\frac{X_{u'} - M_{u'}}{\sigma_{u'}}} + \beta_{\frac{u''}{c''}} \overset{(r_{Ic'''})}{\frac{X_{u''} - M_{u''}}{\sigma_{u'}}} + \text{ and so on}$$

The cumulative correlation after the addition of each test is shown above each respective test at which the cumulative correlations become available. The multiple ratio correlation coefficient is not a true multiple correlation, but is a very close approximation to it."

The description of the method indicates that the variables which have the greatest bearing on the criterion will be retained in the final scale and the ones having little or no bearing will be eliminated. The variables with the greatest bearing will be those with the highest coefficients of correlation with the criterion providing the intercorrelations with the other variables are low. It is advisable to have the intercorrelations between variables as low as possible; otherwise it is probable that they may be measuring the same thing. This effect, however, is removed, as far as an empirical formula can remove it, when the partial correlations have been found. The higher the coefficients are the more efficient the variables. It will be noticed in the intercorrelation table for clerks on page 20 that all correlations are relatively low. This will have the effect of lowering the multiple ratio coefficient and therefore the reliability of the scale built from these variables. The coefficients on the intercorrelation table for salesmen (p. 22) are a little better, as are those for the engineers on p. 23. The correlations for accountants (p. 24) are about the same as those for clerks. Low correlations should not be regarded as a discouraging factor at this stage of the development of this type of work in business. It means, perhaps, that we have not yet found all of the factors that have a bearing on length of service. This fault, it is hoped, can be corrected as the work goes on. Factor after factor should be added until

TABLE NO. 2

CLERKS—GROUP I

INTERCORRELATION TABLE[12]

NUMBER OF EACH VARIABLE	NAME OF EACH VARIABLE	CRITERION	TIME ON LAST JOB	TIME ON NEXT TO LAST JOB	AVERAGE TIME ON LAST 3 JOBS	AVERAGE SALARY ON LAST 3 JOBS	NUMBER OF JOBS	AGE	HEIGHT	WEIGHT	HEIGHT OVER WEIGHT	NUMBER OF DEPENDENTS
	Criterion	1.0000										
1	Length of time on last job	.2194										
2	Length of time on next to last job	.0544	.2045									
3	Average time on last 3 jobs	.1755	.5900	.6520								
4	Average salary on last 3 jobs	−.0348	.0096	.1177	.1333							
5	Number of jobs	−.1732	−.2043	−.0836	−.1542	.2387						
6	Age	.2640	.2856	.3127	.4934	.3837	.3317					
7	Height	.0718	.0945	.0194	.0344	.1633	−.0199	.1109				
8	Weight	.0961	.1261	.0739	.0757	.3102	.0548	.2876	.5005			
9	Height over Weight	−.0485	−.1055	−.0931	−.0889	−.2531	−.0932	−.2611	−.2095	−.9234		
10	Dependents	−.0025	.2304	.0420	.1978	.1404	.0378	.2010	.0280	.1630	−.1611	
11	Education	−.0410	.0144	.0307	−.0969	.0750	−.0601	−.0315	.1451	.1631	−.1355	−.0402

[12] The probable errors for the correlation coefficients of this table will be found in Table No. 3, p. 21.

TABLE NO. 3

Clerks—Group I

PROBABLE ERROR FOR COEFFICIENTS OF CORRELATION IN TABLE NO. 2, P. 20

NUMBER OF EACH VARIABLE	NAME OF EACH VARIABLE	CRITERION	TIME ON LAST JOB	TIME ON NEXT TO LAST JOB	AVERAGE TIME ON LAST 3 JOBS	AVERAGE SALARY ON LAST 3 JOBS	NUMBER OF JOBS	AGE	HEIGHT	WEIGHT	HEIGHT OVER WEIGHT	NUMBER OF DEPENDENTS
1	Length of time on last job.....	± .05										
2	Length of time on next to last job..	± .05	± .05									
3	Average time on last 3 jobs.....	± .05	± .03	± .03								
4	Average salary on last 3 jobs.....	± .05	± .05	± .05	± .05							
5	Number of jobs.....	± .05	± .05	± .05	± .05	± .05						
6	Age.....	± .04	± .04	± .04	± .04	± .04	± .04					
7	Height.....	± .05	± .05	± .05	± .05	± .05	± .05	± .05				
8	Weight.....	± .05	± .05	± .05	± .05	± .04	± .05	± .04	± .04			
9	Height over Weight.....	± .05	± .05	± .05	± .05	± .05	± .05	± .04	± .05	± .01		
10	Dependents.....	± .05	± .05	± .05	± .05	± .05	± .05	± .05	± .05	± .05	± .05	
11	Education.....	± .05	± .05	± .05	± .05	± .05	± .05	± .05	± .05	± .05	± .05	± .05

TABLE NO. 4

Salesmen—Group I

INTERCORRELATION TABLE[13]

Number of each variable	Name of each variable	Criterion	Time on last job	Time on next to last job	Average time on last 3 jobs	Average salary on last 3 jobs	Number of jobs	Age	Height	Weight	Height over weight	Number of dependents
	Criterion	1.0000										
1	Length of time on last job	.3643										
2	Length of time on next to last job	.3667	.4096									
3	Average time on last 3 jobs	.4585	.6823	.7733								
4	Average salary on last 3 jobs	−.1342	.0201	.0675	.0859							
5	Number of jobs	−.2214	−.3178	−.2061	−.3582	.0562						
6	Age	.3101	.2818	.4094	.5052	.3516	.2881					
7	Height	.0190	−.1892	−.0554	−.1373	.0781	−.0499	−.1313				
8	Weight	−.0722	−.0400	−.0600	−.0223	.2046	.0960	.2551	.3895			
9	Height over Weight	.1253	−.0116	.0908	.0093	−.2298	−.1065	−.2792	−.1449	.9431		
10	Dependents	.2033	.1823	.1164	.1902	−.0879	.0674	.2147	−.1625	−.0559	−.0011	
11	Education	−.0192	−.0752	−.0377	−.0175	.4537	.0204	.1698	.2460	.2397	−.1853	−.0154

[13] The probable errors for the correlation coefficients of this table will be found in Table No. 5, p. 23.

TABLE NO. 5

SALESMEN—GROUP I

PROBABLE ERROR FOR COEFFICIENTS OF CORRELATION IN TABLE NO. 4, P. 22

NUMBER OF EACH VARIABLE	NAME OF EACH VARIABLE	CRITERION	TIME ON LAST JOB	TIME ON NEXT TO LAST JOB	AVERAGE TIME ON LAST 3 JOBS	AVERAGE SALARY ON LAST 3 JOBS	NUMBER OF JOBS	AGE	HEIGHT	WEIGHT	HEIGHT OVER WEIGHT	NUMBER OF DEPENDENTS
1	Length of time on last job.....	±.06										
2	Length of time on next to last job..	±.06	±.05									
3	Average time on last 3 jobs.....	±.05	±.03	±.03								
4	Average salary on last 3 jobs.....	±.06	±.06	±.06	±.06							
5	Number of jobs.....	±.06	±.06	±.06	±.06	±.06						
6	Age.....	±.06	±.06	±.05	±.05	±.06	±.06					
7	Height.....	±.06	±.06	±.06	±.06	±.06	±.06	±.06				
8	Weight.....	±.06	±.06	±.06	±.06	±.06	±.06	±.06	±.05			
9	Height over Weight.....	±.06	±.06	±.06	±.06	±.06	±.06	±.06	±.06	±.01		
10	Dependents.....	±.06	±.06	±.06	±.06	±.06	±.06	±.06	±.06	±.06	±.06	
11	Education.....	±.06	±.06	±.06	±.06	±.05	±.06	±.06	±.06	±.06	±.06	±.06

TABLE NO. 6

Accountants—Group I

INTERCORRELATION TABLE[14]

NUMBER OF EACH VARIABLE	NAME OF EACH VARIABLE	CRITERION	TIME ON LAST JOB	TIME ON NEXT TO LAST JOB	AVERAGE TIME ON LAST 3 JOBS	AVERAGE SALARY ON LAST 3 JOBS	NUMBER OF JOBS	AGE	HEIGHT	WEIGHT	HEIGHT OVER WEIGHT	NUMBER OF DEPENDENTS
	Criterion	1.0000										
1	Length of time on last job	.0714										
2	Length of time on next to last job	.1897	.3225									
3	Average time on last 3 jobs	.2731	.5364	.6866								
4	Average salary on last 3 jobs	.0784	.0032	.0873	.0705							
5	Number of jobs	.0324	−.1902	−.0211	−.1463	.3541						
6	Age	.2654	.1399	.3045	.3738	.5354	.4822					
7	Height	.0511	.0747	−.0111	−.0186	.0234	.1176	.0737				
8	Weight	.1657	.1108	.0252	.0713	.2473	.1636	.2526	.5607			
9	Height over Weight	−.1683	−.0933	.0167	−.0547	−.2458	−.1506	−.2372	−.2675	−.9262		
10	Dependents	.0030	.0462	−.0203	−.0632	.1221	.1901	.1228	.1761	.1224	−.0854	
11	Education	−.0545	−.1635	−.1368	−.1574	.1582	.0197	.0482	.0754	.0984	−.0787	.0345

[14] The probable errors for the correlation coefficients of this table will be found in Table No. 7, p. 25.

TABLE NO. 7

ACCOUNTANTS—GROUP I

PROBABLE ERROR FOR COEFFICIENTS OF CORRELATION IN TABLE No. 6, P. 24

NUMBER OF EACH VARIABLE	NAME OF EACH VARIABLE	CRITERION	TIME ON LAST JOB	TIME ON NEXT TO LAST JOB	AVERAGE TIME ON LAST 3 JOBS	AVERAGE SALARY ON LAST 3 JOBS	NUMBER OF JOBS	AGE	HEIGHT	WEIGHT	HEIGHT OVER WEIGHT	NUMBER OF DEPENDENTS
1	Length of time on last job.....	±.05										
2	Length of time on next to last job..	±.05	±.04									
3	Average time on last 3 jobs.....	±.04	±.03	±.03								
4	Average salary on last 3 jobs.....	±.05	±.05	±.05	±.05							
5	Number of jobs.....	±.05	±.05	±.05	±.05	±.04						
6	Age.....	±.04	±.05	±.04	±.04	±.03	±.04					
7	Height.....	±.05	±.05	±.05	±.05	±.05	±.05	±.05				
8	Weight.....	±.05	±.05	±.05	±.05	±.04	±.05	±.04	±.03			
9	Height over Weight.....	±.05	±.05	±.05	±.05	±.04	±.05	±.05	±.04	±.01		
10	Dependents.....	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	
11	Education.....	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05

TABLE NO. 8

ENGINEERS—GROUP I

INTERCORRELATION TABLE[15]

NUMBER OF EACH VARIABLE	NAME OF EACH VARIABLE	CRITERION	TIME ON LAST JOB	TIME ON NEXT TO LAST JOB	AVERAGE TIME ON LAST 3 JOBS	AVERAGE SALARY ON LAST 3 JOBS	NUMBER OF JOBS	AGE	HEIGHT	WEIGHT	HEIGHT OVER WEIGHT	NUMBER OF DEPENDENTS
	Criterion	1.0000										
1	Length of time on last job	.2148										
2	Length of time on next to last job	.1312	.2283									
3	Average time on last 3 jobs	.2570	.6232	.6492								
4	Average salary on last 3 jobs	−.0435	.0125	.1664	.2654							
5	Number of jobs	.1322	−.1160	−.0635	−.1177	.2491						
6	Age	.3567	.2772	.3595	.5551	.4988	.4067					
7	Height	−.1893	−.0154	−.1242	−.0493	−.0556	−.1730	−.1937				
8	Weight	.0938	.0365	−.0102	.0897	.0699	−.0210	.1391	.4775			
9	Height over Weight	−.1252	−.0564	−.0379	−.1214	−.0962	−.0047	−.2103	−.2508	−.9446		
10	Dependents	.1244	.0423	.1118	.1407	.0911	.0950	.2502	−.0210	.0445	−.0686	
11	Education	−.0185	−.1012	−.0952	−.1808	.1000	−.0364	−.1587	−.0276	−.0403	.0092	−.0310

[15] The probable errors for the correlation coefficients of this table will be found in Table No. 9, p. 27.

TABLE NO. 9

ENGINEERS—GROUP I

PROBABLE ERROR FOR COEFFICIENTS OF CORRELATION IN TABLE NO. 8, P. 26

NUMBER OF EACH VARIABLE	NAME OF EACH VARIABLE	CRITERION	TIME ON LAST JOB	TIME ON NEXT TO LAST JOB	AVERAGE TIME ON LAST 3 JOBS	AVERAGE SALARY ON LAST 3 JOBS	NUMBER OF JOBS	AGE	HEIGHT	WEIGHT	HEIGHT OVER WEIGHT	NUMBER OF DEPENDENTS
1	Length of time on last job.....	±.05										
2	Length of time on next to last job..	±.05	±.05									
3	Average time on last 3 jobs.....	±.05	±.03	±.03								
4	Average salary on last 3 jobs.....	±.05	±.05	±.05	±.05							
5	Number of jobs.....	±.05	±.05	±.05	±.05	±.05						
6	Age.....	±.04	±.05	±.04	±.03	±.04	±.04					
7	Height.....	±.05	±.05	±.05	±.05	±.05	±.05	±.05				
8	Weight.....	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.04			
9	Height over Weight.....	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.01		
10	Dependents.....	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	
11	Education.....	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05	±.05

we have found a group of variables that will raise the r_{ic}[16] to a far more appreciable figure than can result from the correlations in this study.[17]

To build the scale for clerks, variable number 6, age, was chosen as a beginning because it had the highest correlation with the criterion and is therefore the best single prediction that we have. Other variables were added by solving the formula for each one in turn.[18] This gave, as is shown in Table No. 10 on p. 29, the variables of age, time on last job, average salary, dependents, weight and time on next to the last job.[19]

For salesmen, the method is the same. Average length of time on the last three jobs having the highest correlation with the criterion formed the first factor of the scale. The other factors are shown in Table No. 11, on p. 30.

The factors that form the scales for accountants and engineers are found in Table No. 12, on p. 31 and Table No. 13, on p. 32.

From the tables just studied (Tables 10, 11, 12 and 13) on pp. 29, 30, 31 and 32, it can be seen (see column C on each Table) that the r_{ic}'s are as follows:

(a) Clerks..... .3453[20]
(b) Salesmen..... .5450
(c) Accountants..... .3502
(d) Engineers..... .4798

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[16] To see clearly how this is done, the reader should follow through the calculations as given in the appendix.

[17] The multiple correlation results obtained in this study are low and therefore the prediction efficiency of the combination is low. In each group studied there were two hundred cases or less and therefore the probable error of many of the correlations used is high. These two facts are emphasized at this point so that the reader will not use the results without realizing that he does so at the risk of unreliable predictions.

[18] See calculations in the appendix.

[19] In this group three variables enter the multiple with negative weights. In each of the other multiple correlations some of the factors have entered with negative weights. This is considered very undesirable by some statisticians. They consider that negative weights on any factors invalidate the results or at least make them very unreliable for prediction purposes. This point of view is taken by Odell. As long as doubt exists as to the validity of results into which negative factors have entered, extreme care must be taken in their use.

[20] The probable errors for the coefficients of multiple correlation given above, by the formula $R = \frac{\sqrt{n-1}}{\sqrt{N}}$ where n equals the number of variables and N equals the number of c ses, are (a) Clerks .1601; (b) Salesmen .2324; (c) Accountants .1224; (d) Engineers .1630.

TABLE NO. 10

CLERK—GROUP I

THE FOLLOWING TABLE SHOWS:

(1) THE CONTRIBUTION OF EACH SIGNIFICANT VARIABLE TO THE EFFICIENCY INDEX AND
(2) THE WEIGHT OF EACH OF THESE VARIABLES IN THE DERIVED SCALE

NUMBER OF EACH VARIABLE	NAME OF EACH VARIABLE	EFFICIENCY INDEX OF THE SCALE		WEIGHTING OF THE COMPONENT VARIABLES			
		CUMULATIVE MULTIPLE RATIO COEFFICIENT	INCREMENT IN COEFFICIENT	STANDARD DEVIATION	BETA	BETA OVER SIGMA	BETA OVER SIGMA REDUCED TO WORKING UNITS
A	B	C	D	E	F	G	H
7	Age	.2640		4.756	1.0000	.2102	12.
1	Time on last job	.3036	.0396	9.6842	.7153	.0738	4.
4	Average salary	.3286	.0250	4.9146	−.5321	−.1082	−6.
11	Dependents	.3373	.0087	.8532	−.3005	−.0352	−2.
9	Weight	.3416	.0043	16.0086	.2159	.0134	.66
2	Time on next to last job	.3453	.0037	10.2440	−.1939	−.0189	−1.

TABLE NO. 11

SALESMEN—GROUP I

THE FOLLOWING TABLE SHOWS:

(1) THE CONTRIBUTION OF EACH SIGNIFICANT VARIABLE TO THE EFFICIENCY INDEX AND

(2) THE WEIGHT OF EACH OF THESE VARIABLES IN THE DERIVED SCALE

NUMBER OF EACH VARIABLE	NAME OF EACH VARIABLE	EFFICIENCY INDEX OF THE SCALE		WEIGHTING OF THE COMPONENT VARIABLES			
		CUMULATIVE MULTIPLE RATIO COEFFICIENT	INCREMENT IN COEFFICIENT	STANDARD DEVIATION	BETA	BETA OVER SIGMA	BETA OVER SIGMA REDUCED TO WORKING UNITS
A	B	C	D	E	F	G	H
3	Average length of time on job....	.4585		9.9620	1.0000	.10038	1.5
4	Average salary.....	.4905	.0320	8.2227	−.3694	−.04492	−.6
7	Age.....	.5107	.0202	6.3218	.3628	.0572	.8
10	Height over Weight.....	.5259	.0152	4.1550	.3002	.0722	1.
6	Number of jobs.....	.5346	.0087	1.1807	−.2449	−.2074	−3.
11	Dependents.....	.5424	.0078	1.1179	.2442	.2184	3.
12	Education.....	.5450	.0026	2.0125	.1389	.0690	1.

TABLE NO. 12

ACCOUNTANTS—GROUP I

THE FOLLOWING TABLE SHOWS:

(1) THE CONTRIBUTION OF EACH SIGNIFICANT VARIABLE TO THE EFFICIENCY INDEX AND
(2) THE WEIGHT OF EACH OF THESE VARIABLES IN THE DERIVED SCALE

NUMBER OF EACH VARIABLE	NAME OF EACH VARIABLE	EFFICIENCY INDEX OF THE SCALE		WEIGHTING OF THE COMPONENT VARIABLES			
		CUMULATIVE MULTIPLE RATIO COEFFICIENT	INCREMENT IN COEFFICIENT	STANDARD DEVIATION	BETA	BETA OVER SIGMA	BETA OVER SIGMA REDUCED TO WORKING UNITS
A	B	C	D	E	F	G	H
3	Average time on 3 jobs.....	.2731		9.903	1.0000	.1010	2.
7	Age.....	.3248	.051	6.6949	.9390	.1402	3.
10	Height over Weight.....	.3442	.0194	4.3198	−.6097	−.1412	−3.
4	Average salary on 3 jobs.....	.3502	.0060	8.9526	−.3414	−.0381	−1.

TABLE NO. 13

ENGINEERS—GROUP I

THE FOLLOWING TABLE SHOWS:

(1) THE CONTRIBUTION OF EACH SIGNIFICANT VARIABLE TO THE EFFICIENCY INDEX AND
(2) THE WEIGHT OF EACH OF THESE VARIABLES IN THE DERIVED SCALE

NUMBER OF EACH VARIABLE	NAME OF EACH VARIABLE	EFFICIENCY INDEX OF THE SCALE		WEIGHTING OF THE COMPONENT VARIABLES			
		CUMULATIVE MULTIPLE RATIO COEFFICIENT	INCREMENT IN COEFFICIENT	STANDARD DEVIATION	BETA	BETA OVER SIGMA	BETA OVER SIGMA REDUCED TO WORKING UNITS
A	B	C	D	E	F	G	H
3	Average time on last 3 jobs.....	.2570		9.9294	1.0000	.1007	2
7	Age.....	.3635	.1065	6.5838	3.62712	.5509	11
4	Average salary.....	.44255	.07905	9.2796	−2.44259	−.2633	−5
8	Height.....	.4580	.01545	2.4540	−1.0593	−.4316	−9
9	Weight.....	.4696	.0110	22.0002	.9087	.0413	1
12	Education.....	.4798	.0102	1.9860	.8533	.4296	9

These r_{ic}'s may seem low but it must be remembered that this study is but the beginning. Ten years ago predictions in the field of education were but slightly higher. In the field of juvenile delinquency they are not at present as high as those that have resulted in this study. It is hoped, then, that as more studies are made in this field that there will be a rise in the coefficients obtained here.

Column D (Tables No. 10, 11, 12 and 13) shows the increment that each variable added to the cofficient.

The next step toward arriving at the final weightings for the factors in each scale is a consideration of the columns marked F. In each F column is listed the weights for each variable as derived from the formula. They are called the Beta weights. Because of the variability of the distribution of cases of each variable these weights cannot be used as they stand. It is necessary in order to eliminate this variability to divide each Beta weight by a standard deviation, for standard deviations are measures of variability. The standard deviation used in each case is that of the variable for which a given Beta weight was found. These are shown in Column E of Tables No. 10, 11, 12 and 13 opposite their respective Beta weights. The resulting weights which are found in column G of each table are comparable but are rather awkward to handle, since each one is a four decimal number. This condition is eliminated by changng to numbers that have relatively the same ratio to each other but are a more convenient size for multiplying.[21]

In Column H of each table (see Tables No. 10, 11, 12 and 13) will be found the final weightings for each selected variable of each group. These weightings indicate the relative value of each one of the variables in making up the final score to predict length of service on a job.

The final weights for the factors in the clerical[22] group were next applied to the clerks of the original material (Group I). This was done by multiplying the age of clerk number one by

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[21] The entire group of weights in column G is multiplied, divided, or both multiplied and divided, by any desired numbers until a convenient size is reached. It is permissible to do this since any group of numbers may be multiplied or divided by the same numbers without altering their relationship.

twelve, his time on the last job by four, his average salary by minus six, his number of dependents by minus two, his weight by sixty-six hundredths and his time on the next to the last job by minus one. The same procedure was carried out with each clerk and the results distributed on a chart.[23] The scores for the clerks were grouped in units of one hundred. The average length of time on the predictedjob was then found for those in each of these groups of one hundred on the score scale. The work was completed by finding the percentage of the total number of cases in each of the score units who left the predicted job before the end of six months, before the end of nine months, twelve months, eighteen months and twenty-four months. The results of this procedure are shown in Table No. 14, p. 35. This table shows that all men receiving a score between 150 and 249.9 (Column A) stayed an average of 8.0 months (Column B), while those making scores on the scale between 250 and 349.9 remained an average of 10.6 months. It is clear as we continue in Column B that those who made the highest scores were those who remained on the average the longest time on the predicted job.

In Column C of the same table, we find that 51.4 per cent of those receiving scores of 249.9 or less left the predicted job before six months, but only 40.8 per cent of those receiving scores between 250 and 349.9 left before the end of six months. This percentage grows less as the scores increase. Each column in the table tells a similar story until we reach Column H. In this column the percent indicates the part of the total number that was left on the predicted job after 24 months. The figures indicate that a low score in the test means on the average a short stay on the predicted job while a high one seems to indicate a long stay. The tables also show that although the increases in average months of service are not even, the gradations between the low and the high scores are, with few exceptions, in the same direction.

The number of cases used was not great so that we cannot rely on the average length of service as given in Column B nor

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[22] Table No. 6, p. 24.
[23] See charts Nos. 1–4 in the appendix.

TABLE NO. 14

Clerks—Group I

CRITERION: LENGTH OF SERVICE ON PREDICTED JOB

Scores Grouped in Units of 100

SCORES	AVERAGE IN MONTHS OF SERVICE	PER CENT LEAVING BEFORE END OF 6 MONTHS	PER CENT LEAVING BEFORE END OF 9 MONTHS	PER CENT LEAVING BEFORE END OF 12 MONTHS	PER CENT LEAVING BEFORE END OF 18 MONTHS	PER CENT LEAVING BEFORE END OF 24 MONTHS	PER CENT REMAINING AFTER 24 MONTHS	NUMBER OF CASES
A	B	C	D	E	F	G	H	I
150–249.9	8.0	51.4	72.7	80.0	89.1	98.2	1.8	55
250–349.9	10.6	40.8	60.2	72.4	83.7	92.9	7.1	98
350–449.9	16.7	24.0	44.0	48.0	68.0	72.0	28.0	25
450 and over	25.2	35.3	41.2	47.1	64.7	64.7	35.3	17

on the percentages leaving at the end of the periods suggested in the table. More reliable results can only be determined when the procedure has been worked through with a much larger number of cases. There is hardly a break, however, in the figures presented and that may be significant relative to the merit of the method since the cases used are so few. It must be remembered, however, that our whole method is built upon formulas produced from central tendency relationships of the original material and that this materially weakens the value of the predictions, even though the multiple correlation coefficient be fairly high. In this study they are low, which increases the unreliability of the prediction.

The same material is presented for salesmen, accountants and engineers in Tables No. 15, 16 and 17 (pp. 37, 38 and 39)[24].

The last step taken was to check the results with outside groups. This was done by taking the clerks of Group II and Group III and scoring them as the original clerks were scored. The scores they received were charted with the actual length of service. The average length of time on the job for these groups at each score level was compared with the average obtained from the original material (Group I). The results are shown in Table No. 18 on p. 40. Although the average number of months for each of the groups does not correspond exactly, the tendency still appears to be toward a short length of service when a low score is obtained and a long period of service when a high one is obtained. The variations in the average number of months may be due to the variations in the groups considered.

The results for the check group of salesmen with the original is shown in Table No. 19, p. 41. They show substantially the same results as were developed for the clerks.

The results obtained with the check groups show that we get substantially the same results from some other groups as we did from the original, but we must not generalize from these few tests. We must remember the limitations of the tools and material that were used.

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[24] Charts Nos. 1, 2, 3 and 4 (pp. 140-141, 142-143, 144-145 and 146-147) show in scatter form the material from which Tables Nos. 14, 15, 16 and 17 were made.

TABLE NO. 15

SALESMEN—GROUP I

CRITERION: LENGTH OF SERVICE ON LAST JOB

SCORES GROUPED IN UNITS OF 50							
SCORES	AVERAGE IN MONTHS OF SERVICE	PER CENT LEAVING BEFORE END OF 6 MONTHS	PER CENT LEAVING BEFORE END OF 9 MONTHS	PER CENT LEAVING BEFORE END OF 12 MONTHS	PER CENT LEAVING BEFORE END OF 24 MONTHS	PER CENT REMAINING AFTER 24 MONTHS	NUMBER OF CASES
A	B	C	D	E	F	G	H
All negatives and 0–24.9	7.2	57.9	72.4	88.3	98.6	1.4	69
25–74.9	16.3	22.8	34.2	48.5	80.0	20.0	35
75 and over	40.1	28.6	42.8	42.8	57.1	42.9	7

TABLE NO. 16

ACCOUNTANTS—GROUP I

CRITERION: LENGTH OF SERVICE ON PREDICTED JOB

GROUPED IN UNITS OF 50

SCORES	AVERAGE IN MONTHS OF SERVICE	PER CENT LEAVING BEFORE END OF 6 MONTHS	PER CENT LEAVING BEFORE END OF 9 MONTHS	PER CENT LEAVING BEFORE END OF 12 MONTHS	PER CENT LEAVING BEFORE END OF 18 MONTHS	PER CENT LEAVING BEFORE END OF 24 MONTHS	PER CENT REMAINING AFTER 24 MONTHS	NUMBER OF CASES
A	B	C	D	E	F	G	H	I
0–49.9	9.6	50.	50.	62.5	75.0	100.	.0	8
50–99.9	11.7	29.4	45.3	63.0	81.5	94.9	5.1	119
100–149.9	17.5	41.5	42.2	56.6	75.4	81.1	18.9	53
150–over	24.2	10.0	20.0	40.0	50.0	60.0	40.0	20

TABLE NO. 17

ENGINEERS—GROUP I

CRITERION: LENGTH OF SERVICE ON THE LAST JOB

SCORES GROUPED IN UNITS OF 100

SCORES	AVERAGE IN MONTHS OF SERVICE	PER CENT LEAVING BEFORE END OF 6 MONTHS	PER CENT LEAVING BEFORE END OF 9 MONTHS	PER CENT LEAVING BEFORE END OF 12 MONTHS	PER CENT LEAVING BEFORE END OF 18 MONTHS	PER CENT LEAVING BEFORE END OF 24 MONTHS	PER CENT REMAINING AFTER 24 MONTHS	NUMBER OF CASES
A	B	C	D	E	F	G	H	I
−400−−300.1	6.7	66.7	100.0	100.0	100.0	100.0	00.0	3
−300−−200.1	8.1	54.8	64.5	80.6	93.5	100.0	00.0	31
−200−−100.1	10.4	25.3	47.1	63.2	88.5	96.6	3.4	87
−100−− 0.1	18.0	18.2	31.8	47.7	61.4	68.2	31.8	44
0− 99.9	36.9	12.5	18.8	43.8	43.8	50.0	50.0	16
100–and over	61.0	14.0	14.0	14.0	14.0	42.0	58.0	7

TABLE NO. 18

CLERKS

AVERAGE NUMBER OF MONTHS OF SERVICE ACCORDING TO SCORES RECEIVED. COMPARISON OF RESULTS IN GROUPS I, II AND III

SCORES	AVERAGE NUMBER OF MONTHS OF SERVICE FOR EACH GROUP							
	GROUP I	CASES	GROUP II	CASES	GROUP III	CASES	AVERAGE FOR TOTAL	CASES
150–249.9	8.0	30	7.8	25	9.0	4	7.9	59
250–349.9	9.2	113	11.2	46	15.2	14	10.2	173
350–449.9	16.0	34	20.8	25	29.2	5	18.9	64
450–549.9	21.3	12	31.3	8	No cases		25.3	20
550 and over	40.5	6	50.3	8	43.5	4	45.5	18
Total Cases		195		112		27		334

TABLE NO. 19

SALESMEN

AVERAGE NUMBER OF MONTHS OF SERVICE ACCORDING TO SCORES RECEIVED. COMPARISON OF RESULTS IN GROUPS I, II AND III

SCORES	AVERAGE NUMBER OF MONTHS OF SERVICE FOR EACH GROUP							
	GROUP I	CASES	GROUP II	CASES	GROUP III	CASES	AVERAGE FOR TOTAL	CASES
All negatives and 0–24.9	7.2	69	4.5	8	7.9	16	7.0	93
25–74.9	16.3	35	15.8	36	22.8	43	18.5	114
75 and over	40.1	7	48.6	8	42.7	18	42.3	33
Total Cases		111		52		77		240

The Method Employed to Analyze Factors Found on Application Records

The Hollerith tabulating machine method was used in the second section of this study.

The variables for the clerical group were punched on the regulation tabulating cards and the sorting started. The first variable was "Present salary by five hundred dollar intervals." The cards were arranged in order, therefore, according to present salary and all of the facts relating to each individual recorded opposite to his present salary. The next sorting was for "Salary on the fourth job back." Again all of the items for each individual were recorded opposite the salary he received on the fourth job back. When this had been done for each variable in each group the long sheets with all the tabulated material on them were taken and the computations made for each factor within each group.

These computations were made by segregating all of the individuals in the present salary group of $000 to $999 a year and averaging each of the variables presented by that group. Table No. 20, p. 56, will illustrate the method more clearly. It was found that there were three clerks whose present salary was below $1000. The salaries of these men on their fourth jobs back were averaged and found to be just $900. The original salaries of these same men averaged $400 a year. The jobs these men had held were averaged and found to be 5. Their average years of experience was eight and so on through each of the various variables. The same procedure was followed for the 53 men in the 1000 to 1499 dollar group, the 96 men in the 1500 to 1999 dollar group, as well as those in the other groups of present salary on that chart. The same procedure was followed when salary on the fourth job back was used as a criterion.

The same procedure was followed for salesmen, accountants and engineers. The results of this entire procedure are found in Tables No. 20 to 63, starting on p. 56.

Table No. 64, p. 115, of this study, to be used in making comparisons between groups, was made by finding the median point

of "present salary" when that factor was used as a criterion, the median point of salary on the fourth job back when that was the criterion, and so on for each of the variables in each occupation as they, individually, were used as criterions.

Table No. 65, p. 116, records the average salary for the married men and the single men for each occupational group. It also gives the number of married men and the number of single men for each group.

The Hollerith method for obtaining information from application blanks is not a new method, but the method of using each variable as a criterion and attempting to draw a picture of what happens to each of the other variables while the selected one acts as the criterion has not been done. From the results indicated in this study it would appear that valuable information may be collected in this way at intervals for each type of occupation. The factors that are used in this investigation are but a few of those that should be studied in this way. Although a number of interesting facts were developed, further study will be necessary before statements may be made regarding them with any great degree of assurance. Even then we must remember that similar studies should be made at intervals in order to determine changes that may have occurred.

In a study of this kind, where a new method is applied to a field in which it has not been used before, many things are noticed during the course of the work that might be done another time in order to improve the results. The author recognizes that this study proposes a method for use in future studies and that the actual results are useful in a very limited way. For this reason, suggestions have been made, throughout the investigation, of points that need more study. Still other suggestions for future study include the following:

(a) A greater number of cases should be studied in each group.

(b) A greater number of factors should be considered.

(c) An intelligence rating should be used.

(d) Formal education and vocational education should appear as separate items.

(e) The entire method should be reworked for specific groups of men.

(f) The entire method should be reworked for specific organizations.

(g) The method should be reworked for a group of specific ability predictive tests for each occupation.

(h) In the tabulating machine method several factors should be kept constant while others are being studied.

(i) There should be a study of salary differences for those persistently remaining a short time on every job as opposed to those always remaining a long time on a job.

Topic (a)

This needs little explanation. It was evident throughout the study that the number of cases in the upper and lower groups was too small. This should be corrected another time.

Topic (b)

The variables considered in this study are not the total number of variables that may affect length of service. Any other study should make an attempt to have ratings on such things as:

(1) Performance on the job.
(2) Home conditions.
(3) Hours of work a day.
(4) Working conditions.
(5) Opportunities for advancement.
(6) Health.
(7) Special training, and
(8) Intelligence (to be considered later).

It is hoped also that in time we may have adequate methods of rating such qualities as:

(1) Initiative.
(2) Personality.
(3) Tact.
(4) Cooperativeness.
(5) Leadership, and
(6) Organizing ability.

When such things as these are added to those already considered, it is hoped that a group of factors may be derived that will give a higher multiple correlation coefficient than this article indicates.

Topic (c).

The factor of intelligence may be a large one in determining length of service. Studies have been made which indicate that there may be a relationship but that it depends on the type of job.[25] It may be difficult to obtain this rating, but future studies will probably be considered lacking that do not consider it.

Topic (d)

It will not be sufficient in the future to know that a man has had sixteen years of education. It will be necessary to know the types of education that he has had during those years. It may be that eight years of the sixteen were spent in specialized training for a particular kind of work, or it may be that twelve years were spent in preparation for the four year academic college course. The effects that different types of education may have on the future of an individual are not known, but we ought to attempt to determine their value in studies of this type.

Topic (e)

This study made an attempt to use homogeneous groups. Relative to accountants, however, the group was composed of (a) a few C. P. A.'s, (b) men with full C. P. A. training, except that they have not passed their C. P. A. examinations and (c) still others who were doing the two years of apprentice work necessary to become full-fledged accountants. Although all of these men are working in the accounting field, they are not accountants of the same grade. Future studies would do well to make the groups studied very specific, that is, for accountants, take the group known as C. P. A.'s, and for engineers, the divisions known as mechanical, electrical and civil. Considering salesmen, studies should be carried on within a given type of business, as, for instance, insurance salesmen, automobile salesmen, typewriter salesmen, and real estate salesmen. The limit to which this may be carried is bounded only by the number of occupations in existence.

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[25] Viteles, M. S. "Selecting Cashiers and Predicting Length of Service," *Journal of Personnel Research*, 1924, Vol. 2, No. 12, pp. 467–473.

Oschrin, E. "Vocational Tests for Retail Saleswomen," *Journal of Applied Psychology*, 1918, Vol. 2, No. 2, pp. 148–155.

Topic (f)

This is suggested because some concerns have rules and regulations that affect the length of time employees stay in that particular organization, but might not affect the length of stay in a similar organization.

Topic (g)

Specific ability tests with predictive value are being used in many industries today. A group of tests of this nature could be studied by the method used in this investigation and grouped in such a way that those of greatest predictive value would be retained, while those of little value would be eliminated. We must remember, however, that so long as we are working with formulas that are dealing in central tendencies we are not likely to arrive at predictive figures that may be used with safety in individual cases.

Topic (h)

An illustration of the study involved under this heading would be as follows: Since years of experience, many times, seem to balance years of education, it is necessary to know what happens to education when years of experience remain constant. This idea when worked out in its entirety by the Hollerith machine method should act as a check on our partial correlations as derived by our empirical formulas.

Topic (i)

Some men tend to remain a short time on every job they hold. They appear to be perpetual floaters. Other men stay for a long time on a job before they change to another one. A study should be made in various occupations of the results from a monetary standpoint of remaining an average of three months on all jobs held, an average of six months, nine months and one year. This would give us a better idea within each occupation of the effect at the present time that changing jobs has on a man's income.

Even when studies have been made which follow the suggestions made in this study, it is not to be expected that perfect prediction will take place, for that cannot come through the methods employed in this research. More efficient predictions

can be looked for than were reached in this investigation, but we must not feel that if a high efficiency in prediction is produced, that it will continue at that efficiency indefinitely, for times change and probably the factors that enter a multiple correlation will also change.

If the tabulation method is followed with care, and complete studies are made often enough, we may be able to point out to an individual about what he may expect to accomplish in a given field with the qualifications he possesses.

III

Practical Applications and Results in Business

The application blank has been a standard business form for many years. It has not been standardized in the sense that all personnel departments agree on the material that it should contain and the way it should be used. The personnel managers of many concerns have compiled much useful material from these records, while others have laboriously collected the items with no real idea in mind of ever using them. For those whose records have been carefully kept the results of this study should be an incentive to determine, from the factors now available, those which will best predict[1] length of service for the employees of their concern. For the concerns that have not kept personal histories of their employees the method presented in this study should offer a point of departure. Records should be maintained for a number of years on which is recorded every available fact concerning new employees. When a sufficient number of cases are available a study similar to this one should be made.

It will be necessary, for a number of years, to gather new facts and to add new elements to those already in each multiple ratio to determine the effect of new elements on length of service. When this has been done for a sufficient number of factors, it is hoped that the multiple ratio correlation will have an efficiency greater than it does at present. If a high efficiency is reached we may feel that the long, laboriously collected application blanks may be dispensed with, and only those few factors collected that are found necessary to determine length of service or quality of service.

It would be possible, if this method reaches a more efficient state, to cut down the clerical force of the personnel department, for we would not be hiring and firing in such quantities as we are at present. A concern would be able to predict, within the limits of the method, the likely length of service for each indi-

[1] Insofar as the partial and multiple method of correlations can predict.

vidual making an application for a position. From those applying, an attempt would be made to select those who have the qualities necessary to fill the job in a satisfactory manner, and who at the same time would remain with the concern long enough to pay them for the expense incurred when they were hired.

Training schools as large as those maintained at present would not be necessary, for a concern would not be training great numbers of people who would not remain with the concern long enough to pay for the training that they receive. No concern likes to train an individual for a given job, and then have that individual leave before the training investment has been repaid to the company in service rendered. The method proposed in this study should minimize this danger when the multiple coefficient reaches a point that may be called efficient, and in doing so, permit large savings to be made in the training school department.

The actual cost of hiring a man and giving him a preliminary training is not the only cost that may be saved by the application of this method for predicting length of service. Usually a new individual does not immediately reach the efficiency of the old employee whose job he has taken. He will probably at first waste more material than the old employee and time will be lost in a number of ways until he becomes thoroughly accustomed to his work. This means lessened production in the type of work he is doing. Besides these things, more or less restlessness seems to enter other employees when changes continually occur. The very fact that many changes are taking place makes it very difficult to keep the morale of the group at a point nearing perfection. The loss involved in the above is hard to calculate but it should be reduced by the application of the method suggested in this study.

Apply this method to salesmen, who change jobs more frequently than any other group, and the following losses, other things being equal, should be minimized:

(a) Loss because he does not know how to travel his territory advantageously.

(b) Loss of old customers who will not buy from the new salesman.

(c) Loss of customer's confidence when changes occur in the sales force too frequently.

(d) Loss of time on part of the sales manager who has to follow and encourage each new man.

(e) Loss to the concern through wrong prices quoted by new men.

(f) Loss to the concern through lost orders. Such orders are ones that the concern would have received had their salesman been aware that they were to be awarded at a given time.

(g) Losses that occur while the salesman is learning the product.

(h) Losses that occur when the new salesman, anxious to make sales, sells continuously only those articles of his line that are meant to be leaders and on which his concern is making but a small margin of profit.

The possibilities that this method holds for the clerical, the selling or the engineering groups are also open in other fields. It may be applied to the selection of mechanics, telephone operators, retail saleswomen, taxicab drivers, motormen or any other homogeneous group of labor. Length of service at present is determined by chance. This method when it reaches a point of greater efficiency offers the possibility of removing some of that chance.

It may be maintained by some that once the factors that were used for determining length of service in any occupation became known that applicants would falsify their records.[2] This objection may be answered by saying that it would be hard to falsify such things as height, weight, or number of dependents. Length of time on previous jobs and the attendant salary could readily be checked as could years of education and age. Other factors that may be added later may grow more difficult to check but it seems that the majority of them can be obtained with a reasonable degree of assurance that they are correct.

The method suggested in this study will not take the place of the personal interview nor can it take the place of predictive

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[2] New studies from time to time may change the factors that enter the multiple correlation. This would automatically eliminate the objection.

tests relating to success on the job. It will aid the interviewer to do a task that he has not been able to do with a satisfying degree of success up to the present time. As a method it suggests a way of eliminating those predictive tests which are of little value and retaining those of greatest value.

Consideration should be given at this time to the value of the second part of this study in the business field.

When hiring salesmen, for instance, it might be a good thing for the employer to know that those with more education are among the salesmen who receive more money.[3] He might profit by knowing that experience increases as salary does, and by realizing that the chances are against the average salesman in the forties becoming any more efficient than he already is. The fact that on the average the salesmen who make the most money are among those who are above the average in height would make him cautious about hiring a group of little men to sell his product unless they possessed other factors to offset their lack in height.[4] Not only might an employer with this knowledge select men more successfully but he would have the opportunity to offer guidance to individuals who apparently were not fitted for the field in which they were seeking employment.

Although the table for clerks seems to indicate that the best types (monetary results considered) are to be found among clerks who are married, have less than three children, possess

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[3] Education is the only factor relating to intelligence that appears in this study. The author desired to have an intelligence rating for every case in the study but the use of dead records made this impossible. An attempt was made to have this rating on one group at least and so letters were sent to about four hundred evening school students asking them to take an Army Alpha test and at the same time supply the other information that was necessary relative to their working history. Of the group that responded, there were but twenty-seven records that could be considered homogeneous. The records were those of clerks. Their characteristics were scored, using the factors and weights suggested for clerks in Table No. 6, p. 24. These scores were correlated with the scores obtained on the Army Alpha test No. 7 and gave a coefficient of $-.13$. The Army Alpha test scores were next correlated with the actual time that these men remained on the predicted job. This correlation gave a coefficient of .12, which may be an indication that intelligence might, if used, raise the correlation figure of .345 between predicted time on the job and actual time spent on the job. The author feels that intelligence should be one of the further factors to receive attention in future studies using this method to predict length of service.

about ten years of education and a reasonable amount of experience, this is not always true. If these qualities are not present, an employer should determine, if possible, whether or not the applicant possesses compensating factors.

Similar characteristics chosen from the tables for accountants and engineers would be valuable in selecting employees in these occupations. In time it is hoped that more characteristics will be delineated in the same way for a greater number of occupations. With this type of information in the hands of employers[5] to help them select employees and in the hands of guidance directors[5] who will aid the youth of the country in selecting the channel in which he may expect the greatest returns for the qualifications he possesses, it seems that there should be fewer misfits and fewer restless individuals, which should in turn produce happier relations throughout the business world.

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[4] The limitations of the method will not permit him to select, with a high degree of efficiency, but with its use he will probably make better choices than by chance alone.

[5] They must, however, use the information wisely and not attempt to make it do what it never was supposed to do.

IV

Vocational Guidance Results

The material of this study is presented in the form in which it appears in this section chiefly for use in vocational guidance. Those interested in this work realize the difficulties that confront a guidance director when he attempts to counsel a bewildered student relative to the future. Concrete material on which to base judgments is very scarce and in most cases the judgment given to the student is the result of the personal feelings of the director. Knowing, as guidance directors do, that this is the case, there arises the temptation to accept too readily the results of new investigations in the field and that must be warned against.

This study simply proposes a *method* by which it is hoped that new facts, relative to present requirements for monetary success in various types of work, may be determined. The results of this study, therefore, are not final; they are but a beginning. The statements that follow are made with the realization that they are based on the averages obtained from the individuals composing each group and for that reason *cannot* be applied with great reliability to individual cases. Causal relationships may exist but the method used in this study shows relationship only. Empirical formulas exist[1] which to some extent show causal relations, but they were *not* employed in this investigation.

Although this study has made an attempt to separate more factors and in a greater variety of occupations than most others, still the number of cases in the upper and lower limits of each group are too few to permit of great reliability. In time the author expects to add to the cases in each of the fields in which

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[1] Regression equations derived from partial correlations in which the effect of the variability of the distributions of the several factors still remain are said to bring out causal relationships. The causal relationship, however, as shown by this method must be guarded against, since these formulas are developed from central tendencies. A good guess may be made from the results obtained—one that is a little better than it would have been without the formula, but that does not mean that it is anywhere near perfect. This procedure was *not* used in this study.

this study was made and produce more reliable tables. If the limitations which have been shown to exist in connection with the results of this research are held in mind at all times, the tables and the results presented here may be of some value in determining the worth of each factor (for the years and the material used) in each of the fields of endeavor discussed. A guidance director may, for instance, compare the monetary rewards of the cases studied in each field at different age, experience or educational levels. He also may picture roughly the types in each field that are receiving the small and the large remunerations. In making these deductions, however, care must be taken not to overstep the bounds of reliability represented by the figures.

The four types of employment previously considered will be presented in the following order (a) clerks, (b) salesmen, (c) accountants and (d) engineers. For each group eleven tables were prepared in each one of which a different factor was used as a criterion. The results gathered from these tables will be presented, first, as a statement of the significant facts found in individual tables; second, as significant facts related to a group, and third, as a comparison of the four groups.

The Clerical Group

Table 20, on p. 56, where present salary, grouped in five hundred dollar intervals is used as a criterion, indicates that those men who are receiving more money now also received more on their fourth job back and in their original position. It also indicates that the percentage of increase of the present salary over the salary of the fourth job back increases as the present salary increases. Similarly, there is a very slight tendency for height to increase as salary increases.

Table 21, on p. 58, uses the salary of the fourth job back as a criterion. In this table the original and present salaries show a tendency to increase as the salary on the fourth job back increases. It also seems that, as a man's salary on the fourth job back increases, the number of jobs that he has held increases. This does not mean necessarily that the extra positions aided in giving

him the increased salary, for we find that it may have resulted from more experience, an increase in age, or a little more education—all of which show a tendency to increase as salary on the fourth job back increases.

Table 22, p. 59, has for a criterion the original salary made by the clerical group. In this table as the original salary increases there is a very slight tendency for the present salary to increase in the two steps of the table where there are sufficient cases to work with. It should be noted, however, that a table containing but three groups as this one does is a weak table compared to one having a great number of steps. Definite statements should not be made from this table.

From table 23, p. 60, where number of jobs that a man has held acts as the criterion, it appears that present salary does not materially change as the number of jobs increases. The salary of the fourth job back, however, is increased as the number of jobs increases. Another fact is that the per cent of increase of present salary over salary on the fourth job back becomes less as the number of jobs increases.

The criterion years of experience as expressed in Table No. 24 on p. 61 shows that there may be, among clerks, a slight increase in salary with an increase in number of years of experience. Other apparent increases occur in the factors of age, number of jobs held, and dependents, although the last mentioned is not very striking.

The factor of age which is tabulated in Table No. 25 on p. 62 shows that older clerks have higher salaries on the whole. This seems to hold true also for the salary of the fourth job back and for original salary. The table also indicates that as age increases the number of jobs that a man has held increases as do years of experience.

Table No. 26, on p. 63, where height is the criterion, does not show a tendency for any factor to vary appreciably with height. Weight varies most regularly but even in this factor there are decided breaks. Present salary might be considered to show a very slight increase but it is not consistent enough to regard until more cases have been added.

Table No. 27, on p. 64, using dependents as a criterion seems

TABLE NO. 20

Clerks

CRITERION: PRESENT SALARY—BY $500 INTERVALS[2]

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
3	000– 999	900.00	400.00	25.0	00.0	5.0	8.0	25.8	5′ 8 1-3″	.3	155.7	9.7
53	1000–1499	801.32	785.71	59.0	55.9	4.7	4.7	22.8	5′ 7 3-5″	.8	140.8	9.6
96	1500–1999	981.71	920.25	90.1	78.2	5.1	7.4	26.4	5′ 7 7-10″	.9	148.6	10.1
19	2000–2499	968.42	890.00	152.8	132.2	5.4	9.9	28.6	5′ 8″	.8	145.3	9.8
2	2500–2999	1250.00	1000.00	175.0	120.0	5.5	6.5	28.5	5′ 11″	1.0	180.0	11.0
1	4000–4499	1200.00	1200.00	250.0	250.0	4.0	14.0	30.0	5′ 9″	1.0	198.0	8.0

[2] See footnote page 57.

[2] Instructions for Reading Tables No. 20 to 30 Relating to Clerks

A. Reading across Table No. 20, p. 56. Consider the second line of the table which starts with the number 53. Fifty-three cases were found whose present yearly salary was in the $1000 to $1499 group. The average salary that this group was receiving on the fourth job back was $801.32. Their average original salary was $785.71. The percent of increase of their present salary over their original salary was 59 while the percent of increase of their present salary over their fourth job back was 55.9. They had an average of 4.7 jobs, and 4.7 years of experience. This group averages 22.8 years of age and is 5′7 3-5″ tall. They average .8 of a dependent each, weigh 140.8 pounds and have had 9.6 years of schooling.

B. Reading down each column. The first column at the left is headed "number of cases" and means, starting with the 3 at the top of the column, that the statistics of 3 cases were averaged to give figures in the line to the right of the 3. There were 53 cases in the next group, 96 in the following one and 19, 2 and 1 in the succeeding groups.

Column two shows the present salary range for each group as follows: the first group includes all salaries between zero dollars a year and $999 a year; the second group starts at $1000 and goes to $1499; while the third group goes from $1500 to $1999. The other groups in order are $2000 to $2499, $2500 to $2999 and the last group at $4200.

Column three shows the average salary received by each group on the fourth job back while column four shows the average original salary of each group.

Column five shows the percent of increase of the average present salary of each group over the average original salary and column six gives the per cent of increase of the average present salary of each group over the average salary of the fourth job back.

The succeeding columns show in order the following: average number of jobs held by each group, the average number of years of experience, the average age, the average height, the average number of dependents, the average weight and in the last column the average number of years of schooling.

TABLE NO. 21

CLERKS

CRITERION: SALARY ON 4TH JOB BACK BY $500 INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
82	1450.46	000– 999	732.20	98.1	93.4	4.6	6.3	23.9	5′ 8″	.8	144.0	9.7
87	1659.19	1000–1499	1107.14	49.9	32.7	5.3	7.4	27.2	5′ 7 6-10″	.9	147.3	10.0
4	1910.00	1500–1999			9.1	5.8	9.8	28.5	5′ 9 ¼″	.8	155.2	10.5
1	3600.00	2000–2499	1500.00	140.0	60.0	7.0	13.0	39.0	5′ 8″	1.0	138.0	16.0

TABLE NO. 22

CLERKS

CRITERION: ORIGINAL SALARY BY $500 INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
49	1434.36		000– 999	91.64		4	6.1	26.2	5′ 8 4-10′	.5	147.0	9.9
28	2458.56		1000–1499	96.70		4	6.1	27.2	5′ 8 6-10″	1.0	151.6	10.1
1	1700.00		1500–	13.33		4	3.0	25.0	5′ 10″	.0	165.0	16.0

TABLE NO. 23

CLERKS

CRITERION: NUMBER OF JOBS—BY ONE-JOB INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
76	1451.20	865.86	865.86	77.9	77.9	4	6.2	24.8	5′ 7 3-5″	.9	147.1	10.0
40	1513.75	873.00			73.3	5	6.2	24.1	5′ 7 1-5″	.8	142.7	9.8
40	1646.25	1028.75			88.5	6	7.6	26.11	5′ 8 3-5″	.9	149.2	9.9
17	1632.35	1050.00			55.4	7	10.5	31.5	5′ 7 4-5″	.9	154.3	9.5
1	1500.00	1200.00			25.0	8	6.0	26.0	5′ 9″	1.0	132.0	9.0

TABLE NO. 24

CLERKS

CRITERION: YEARS OF EXPERIENCE—BY FIVE-YEAR INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
57	1409.64	883.33	858.06	64.2	59.5	4.6	1– 4	21.8	5′ 8 3-10″	.7	142.8	10.1
74	1591.09	927.26	881.29	80.5	71.5	5.0	5– 9	25.7	5′ 7 9-10″	.9	151.2	10.1
35	1734.00	1005.71	872.72	98.6	72.4	5.4	10–14	29.0	5′ 8 1-5″	1.0	148.2	9.3
6	1800.00	820.00	520.00	246.1	119.5	5.8	15–19	35.3	5′ 8″	1.0	151.3	8.5
1	1650.00	900.00	900.00	83.3	83.3	4.0	20–24	40.0	6 2″	1.0	150.0	10.0
1	1600.00	1000.00			60.0	7.0	25–29	46.0	5′ 8″	2.0	144.0	12.0

TABLE NO. 25

CLERKS

CRITERION: AGE BY FIVE-YEAR INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
5	1250.00	650.00	687.50	81.8	92.3	5.2	2.6	–19	5′ 7″	.2	135.2	8.8
86	1448.83	883.60	845.50	71.3	63.9	4.8	4.5	20–24	5′ 7 4-5″	.8	143.8	10.1
50	1684.49	951.02	850.00	98.1	77.1	5.2	8.5	25–29	5′ 8 ½″	1.0	149.5	9.9
24	1808.33	1027.91	1029.09	75.7	75.9	5.2	10.2	30–34	5′ 7 3-5″	1.0	153.6	9.4
5	1660.00	1050.00			58.0	6.0	11.6	35–39	5′ 10″	.4	163.6	10.4
2	1525.00	1050.00	900.00	69.4	45.2	5.5	16.0	40–44	5′ 11″	1.0	142.5	9.0
2	1800.00	1100.00			63.6	7.0	21.0	45–49	5′ 8″	1.3	156.0	9.5

TABLE NO. 26

CLERKS

CRITERION: HEIGHT BY ONE-INCH INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
1	1200.00	770.00			55.8	5.0	6.0	22.0	5′ 0″	1.0	110.0	10.0
1	1150.00	500.00	500.00	130.0	130.0	4.0	5.0	21.0	5′ 2″		125.0	8.0
3	1316.66	833.33	1100.00	19.6	57.9	4.7	6.0	25.3	5′ 3″	1.0	136.0	9.0
3	1050.00	983.33			6.7	5.0	3.7	21.3	5′ 4″	.7	129.3	10.7
11	1617.27	940.90	887.50	82.2	71.8	5.2	6.2	25.4	5′ 5″	.8	135.7	10.2
21	1547.61	781.42	719.00	115.2	98.0	4.8	7.2	24.7	5′ 6″	1.0	137.8	9.1
32	1482.81	925.00	886.36	67.2	60.3	5.1	6.5	24.9	5′ 7″	.8	145.0	9.8
26	1621.15	975.00	892.22	81.6	66.2	5.3	8.5	28.2	5′ 8″	1.0	143.2	9.6
27	1732.96	998.14	886.66	945.4	73.6	5.1	7.2	25.8	5′ 9″	.8	154.6	10.5
19	1538.88	897.22	911.11	68.9	71.5	4.7	6.5	24.7	5′ 10″	.7	158.8	9.7
13	1503.84	930.76	885.71	69.7	61.5	4.8	6.3	24.0	5′ 11″	.9	139.6	10.2
8	1662.50	1061.25	933.33	78.1	56.6	5.2	6.5	26.8	6′ 0″	1.1	167.2	11.1
7	1542.85	914.28	850.00	81.5	68.7	4.8	5.3	23.7	6′ 1″	1.0	162.3	10.6
2	1425.00	900.00	900.00	58.3	58.3	4.0	13.5	35.0	6′ 2″	1.5	155.0	9.0

TABLE NO. 27

CLERKS

CRITERION: NUMBER OF DEPENDENTS BY INTERVALS OF ONE

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
68	1485.29	895.14	817.81	81.6	65.9	4.9	5.9	24.3	5′ 8 1-10″	0	143.4	10.0
71	1660.00	959.14	939.62	76.6	73.0	5.1	7.7	26.6	5′ 8″	1	147.1	9.8
26	1545.76	896.15	745.00	107.4	72.4	5.2	7.3	26.0	5′ 8 ½″	2	151.3	10.0
8	1556.25	981.25	991.66	56.9	58.5	4.5	8.1	27.1	5′ 7 1-10″	3	155.2	9.6
1	1400.00	900.00			55.5	5.0	4.0	21.0	5′ 6″	4	144.0	9.0

TABLE NO. 28

CLERKS

CRITERION: WEIGHT BY TEN-POUND INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
2	1200.00	685.00			75.1	5.5	4.5	21.0	5′ 3″	.5	110–119	9.0
12	1475.83	780.88	702.85	109.9	89.0	4.4	5.7	23.0	5′ 5 4-5″	.6	120–129	8.6
33	1545.45	934.84	880.00	75.6	65.3	5.3	6.8	25.6	5′ 7 1-10″	.7	130–139	9.7
56	1540.74	931.85	872.80	76.5	65.3	4.8	6.5	24.9	5′ 7 4-5″	.9	140–149	10.3
31	1549.67	875.80	785.71	97.2	76.9	5.0	7.2	25.2	5′ 8 4-5″	1.0	150–159	9.8
29	1573.21	974.13	979.16	60.6	61.4	5.2	8.0	27.3	5′ 9 3-10″	1.1	160–169	9.8
2	2050.00	1250.00	1000.00	105.0	64.0	5.5	6.0	24.5	5′ 9″	1.0	170–179	10.5
3	1533.33	766.66	900.00	70.3	100.00	4.7	10.7	29.3	5′ 9 1-3″	.7	180–189	10.7
2	3450.00	1100.00	1100.00	213.6	213.6	4.0	9.5	30.0	5′ 11″	.5	190–199	11.0
3	1600.00	1066.66			50.0	6.3	5.7	32.7	6 0″	1.0	200–209	11.0
1	1800.00	900.00	900.00	100.0	100.0	4.0	7.0	28.0	5′ 9″	1.0	210–219	11.0

TABLE NO. 29

CLERKS

CRITERION: MARRIED, SINGLE OR WIDOWER

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	MARRIED OR SINGLE	AVERAGE YEARS OF EDUCATION
63	1665.32	984.67	971.73	71.3	69.1	5.0	8.4	27.6	5′ 8 ½″	1.3	150.6	1	10.0
111	1506.78	893.21	819.03	83.9	68.6	5.0	6.1	24.4	5′ 7 9-10″	.6	144.4	2	9.8

to show no variations in the other factors distributed. The apparent drop in salary of the men with three or four children should not be relied upon, since there are but eight cases considered in these two classes. Further cases should be added before an opinion is formed relative to the tendency in salary, height and education when dependents are considered.

An increase in the factor of weight as shown in Table No. 28, on p. 65, is accompanied by a tendency toward increased present salary, original salary and salary on the fourth job back. There is also a tendency toward increases in height, education, age and experience.

When clerks are grouped according to their marital state as in Table No. 29 on p. 66, it is noticeable that the married men are older, have more experience, have held more jobs, are slightly heavier and have more dependents. One other thing that presents itself is the relatively small increase (average considered) in salary of the married group over the single group.

The last factor relating to clerks is education and is shown in Table No. 30 on p. 68. This table indicates that the clerks who have more education have a tendency to have a larger original salary and a larger salary on the fourth job back. The present salary column indicates that salary does not always vary with education. Further, the table indicates that as education increases, experience and number of jobs tend to decrease.

Summary

From the foregoing statements and the actual salaries presented in the tables, it appears that a man entering clerical work does not have a great deal to look forward to. Naturally, we must not overlook the fact that many of our executives are chosen eventually from this group, but the percentage of the total going to higher positions is probably small. The question that well may be asked next is,—"What type of clerk probably makes the forward step to a better position?" This man is not picked from the low salaried group—he must be the man who has for some reason or other advanced to the top of the clerical group. When this upper salary group is analyzed it is found to contain the tall men, the men with more education, those with more experience who have not changed jobs too

TABLE NO. 30

CLERKS

CRITERION: YEARS OF SCHOOLING BY ONE-YEAR INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
3	1766.66	900.00	750.00	135.5	96.2	5.0	10.3	34.7	5′ 8″	1.0	152.0	7.0
34	1680.88	873.23	786.87	113.6	92.4	5.0	7.7	25.9	5′ 7 ½″	1.0	142.8	8.0
37	1545.67	922.97	865.00	78.6	67.4	5.4	7.5	24.9	5′ 7 9-10″	.8	145.4	9.0
43	1484.52	902.85	829.54	78.9	64.4	4.7	6.5	25.3	5′ 8 3-10″	.7	145.3	10.0
26	1578.84	925.00	872.22	81.0	70.6	5.2	6.3	25.5	5′ 8 3-5″	1.1	154.5	11.0
26	1601.92	1023.07	1012.50	58.2	56.5	5.0	6.8	26.0	5′ 8 ½″	.8	149.0	12.0
3	1450.00	1066.66	1100.00	31.8	35.9	4.7	3.0	22.7	5′ 8 1-3″	1.0	151.7	13.0
1	2700.00	1000.00	1000.00	170.0	170.0	4.0	5.0	30.0	6′ 1″		190.0	14.0
1	1500.00	750.00	750.00	100.0	100.0	4.0	2.0	24.0	5′ 9″	1.0	143.0	16.0

frequently, and those who, though married, have less than three children. To this picture must be added the fact that the average remuneration in this field does not seem to be very large. It may be as great, however, as the majority of men who enter the field are capable of making at any type of work, but that question remains for future investigations to solve.

The Selling Group

The criteria used for salesmen are the same as those used in the preceding group. The order of presentation is the same and the precautions urged for the clerical group should be held in mind while studying this group.

The characteristics of present salary groups for salesmen are presented in Table No. 31 on p. 70. If the present salary of a salesman is high this table indicates that it was also high originally and on the fourth job back. It seems, however, that those who have reached the upper monetary levels in selling have done so by increasing more rapidly than their colleagues the distance between present and original salary. Better salaries seem to be accompanied by a slight increase in age, experience, height and education.

In Table No. 32 on p. 72 where salary on the fourth job back is the base we are again impressed with the fact that increased education seems to accompany increased salary. This table also indicates that those with high salaries on the fourth job back also received high original salaries. In Table No. 33 on p. 73, those with high original salaries possess on the average a greater amount of education than those with low original salaries. The men with high original salaries seem to continue to receive high salaries down to their present positions. It is interesting to note that the taller, heavier men are those in the upper salaried groups.

As the number of jobs that a salesman holds increases (Table No. 34, on p. 74) his salary rises, although the percent of increase in each new job over the preceding one is less. There is a tendency to have more experience and to be slightly older as the number of jobs held increases.

The indications resulting from Table No. 35 on p. 75 show that

TABLE NO. 31

SALESMEN

CRITERION: PRESENT SALARY—$500 INTERVALS[3]

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
44	1000–1499	1586.12	1621.25	−36.0	−24.4	5.6	7.0	27.9	5′ 8 3-5″	.6	152.4	11.2
40	1500–1999	1148.10	1133 12	54.4	52.4	5.3	7.0	27.7	5′ 8 1-5″	1.0	150.2	10.6
43	2000–2499	1399.72	1153 33	95.0	69.7	5.8	8.3	29.7	5′ 9 1-5″	1.0	151.2	11.2
11	2500–2999	1350.00	1450.00	89.6	103.7	5.9	8.8	29.3	5′ 9 3-5″	.8	152.1	12.1
12	3000–3499	1797.50	1643.33	97.7	80.8	5.4	9.8	31.2	5′ 8 2-5″	.8	156.3	11.9
6	3500–3999	1840.00	1000.00	275.0	103.8	5.5	8.3	21.2	5′ 9 2-3″	1.2	170.0	13.2
5	4000–4499	2775.00	1800 00	136.1	53.1	5.6	14.4	38.0	5′ 8 1-5″	.8	154.0	12.2
8	5000–5499	2075.00	2000 00	162 5	153.0	6.5	14.3	43.1	5′ 9 1-10″	.5	166.8	11.8
1	5500–5999					4.0	12.0	33.0	5′ 9 1-10″		175.0	14.0
2	6000–6499	2550.00			145.0	6.0	16.0	37.5	5′ 9 ½″	1.0	164.5	12.5
1	8500–8999	5000.00	5000.00	75.0	75.0	4.0	8.0	32.0	5′ 9 1-10″	1.0	144.0	16.0

[3] See footnote page 71

[3] Instructions for Reading Tables Nos. 31 to No. 41 Relating to Salesmen

A. Reading across Table No. 31, p. 70. Consider the second line of the table which starts with the number 40. Forty cases were found whose present yearly salary was in the $1500 to $1999 group. The average yearly salary that this group was receiving on the fourth job back was $1148.10. Their average original salary was $1133.12. The per cent of increase of their present salary over their original salary was 54.4 while the per cent of increase of their present salary over their fourth job back was 52.4. They had an average of 5.30 jobs and 7.0 years of experience. This group averages 27.7 years of age and is 5′8 1-5″ tall. They average 1.0 dependent each, weight 150.2 pounds and have had 10.6 years of schooling.

B. Reading down each column. The first column at the left is headed number of cases and means, starting with the 44 at the top of the column, that the statistics of 44 cases were averaged to give the figures at the right of 44. There were 40 cases in the next group, 43 in the following one and 11, 12, 6, 5, 8, 1, 2 and 1 in the succeeding groups.

Column two shows the present salary range for each group as follows: the first group includes all salaries between $1000 and $1499 a year; the second group starts at $1500 and goes to $1999 while the third group goes from $2000 to $2499. The other groups in order are $2500 to $2999, $3000 to $3499, $3500 to $3999, $4000 to $4499, $5000 to $5499, $5500 to $5999, $6000 to $6499 and $8500 to $8999.

Column three shows the average salary received by each group on the fourth job back while column four shows the average original salary of each group.

Column five shows the percent of increase of the average present salary of each group over the average original salary and column six gives the per cent of increase of the average present salary of each group over the average salary of the fourth job back.

The succeeding columns show in order the following: average number of jobs held by each group, the average number of years of experience, the average age, the average height, the average number of dependents, the average weight and in the last column the average number of years of schooling.

TABLE NO. 32

SALESMEN

CRITERION: SALARY ON 4TH JOB BACK BY $500 INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
1	1600.00	0– 499	450.00	255.6	255.6	4.0	23.0	42.0	5′ 6″	4.0	145.0	7.0
19	1633.33	500– 999	807.00	102.4	117.8	4.8	6.3	25.3	5′ 8 1-3″	.5	145.2	10.7
51	2211.11	1000–1499	1128.12	96.0	76.9	5.4	7.6	37.9	5′ 8 5-6″	1.0	152.9	11.0
41	2564.06	1500–1999	1714.28	49.6	46.5	5.8	3.1	30.2	5′ 9″	.6	154.8	11.8
19	3463.66	2000–2499	2040.00	70.0	54.2	6.2	10.7	34.2	5′ 9 1-6″	1.1	160.0	11.7
2	5000.00	2500–2999			81.8	6.5	13.0	33.0	5′ 9″	.3	169.0	12.0
2	2250.00	3000–3499			–44.4	5.0	4.5	28.0	5′ 10-½″	.0	162.0	14.0
3	5000.00	3500–3999			33.3	7.7	13.7	39.0	5′ 7 2-3″	1.3	148.0	12.3
1	4000.00	4000–4499			.0	6.0	12.0	35.0	5′ 6″	3.0	160.0	
2	3500.00	4500–4999	5000.00	70.0	78.9	4.0	5.5	28.5	5′ 8 ½″	1.5	143.5	16.0

TABLE NO. 33

SALESMEN

CRITERION: ORIGINAL SALARY BY $500 INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
18	1983.33		000– 999	164.44		4	6.4	25.7	5′ 8 7-10″	.7	149.6	11.3
16	2163.33		1000–1499	73.46		4	6.3	26.6	5′ 8″	.9	149.9	10.4
7	2610.00		1500–1999	69.14		4	8.6	31.4	5′ 8 8-10″	.4	154.6	13.1
2	4290.00		2000–2499	90.66		4	16.0	36.0	5 10″	.0	182.0	13.5
1	1500.00		3000			4	3.0	26.0	6′ 3″	.0	175.0	16.0
2	8500.00		5000	70.00		4	5.5	29.5	5′ 8 5-10″	1.5	143.5	16.0

TABLE NO. 34

SALESMEN

CRITERION: NUMBER OF JOBS—BY ONE-JOB INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERI-ENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPEND-ENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCA-TION
47	2445.40	1426.92	1426.92	71.3	71.3	4	7.1	27.5	5′ 9″	1.2	152.1	11.9
27	2550.00	1368.57			86.3	5	7.1	27.8	5′ 9 2-5″	.8	153.8	11.0
52	2518.29	1586.17			58.7	6	7.5	28.8	5′ 9″	.9	155.0	11.2
43	2516.21	1626.36			54.7	7	10.4	32.6	5′ 8 ½″	.9	151.4	10.6
3	3266.66	2500.00			30.6	8	15.0	37.3	5′ 10″	1.7	174.0	13.7
1		3600.00				10	7.0	31.0	5′ 7″	1.0	140.0	12.0

TABLE NO. 35

SALESMEN

CRITERION: YEARS OF EXPERIENCE BY FIVE-YEAR INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
38	1877.77	1422.58	1431.25	31.1	31.8	4.9	0– 4	24.0	5′ 9″	.5	148.1	11.7
83	2490.44	1555.29	1550.00	60.6	60.1	7.0	5– 9	27.6	5′ 8 ¾″	1.0	154.3	11.4
29	2908.00	1602.91	1204.00	141.5	81.4	5.6	10–14	32.6	5′ 9 ¾″	.6	153.1	11.2
14	2926.92	1461.11	1125.00	160.1	100.3	6.3	15–19	38.2	5′ 9″	1.2	151.5	10.8
8	2422.50	1966.25	1443.33	67.8	23.2	6.0	20–24	44.9	5′ 9″	1.4	169.9	11.1
1		1500.00				7.0	25–29	44.0	6′ 0″		180.0	8.0

TABLE NO. 36

SALESMEN

CRITERION: AGE BY FIVE-YEAR INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERI-ENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPEND-ENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCA-TION
39	1746.29	1085.66	1025.00	70.3	60.8	4.9	4.0	20–24	5′ 8 4-5″	.5	149.8	11.0
65	2343.75	1504.90	1558.57	50.3	55.7	5.6	6.3	25–29	5′ 10″	1.0	152.7	11.3
38	2996.77	1513.15	1950.00	53.6	98.0	5.9	9.0	30–34	5′ 9″	.6	152.4	11.7
15	3738.46	2003.57	1125.00	232.3	86.5	6.1	14.3	35–39	5′ 8 3-5″	1.0	161.4	11.2
11	2391.25	1490.00	1265.00	89.0	60.4	6.1	17.0	40–44	5′ 9″	1.4	156.4	11.5
3	2383.83	1700.00			40.1	7.0	18.0	45–49	5′ 7″	1.0	175.0	10.0
2	4000.00	2650.00	1800.00	122.2	50.9	5.5	21.0	50–54	5′ 4 ½″	1.5	155.0	11.5

TABLE NO. 37

SALESMEN

CRITERION: HEIGHT BY ONE-INCH INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
2	1800.00	1440.00	1440.00	25.0	25.0	4.0	14.0	37.5	5′ 3″	1.5	152.5	10.5
2	2100.00	950.00	950.00	121.0	121.0	4.0	6.5	24.0	5′ 4″	2.5	127.0	10.0
3	2400.00	1366.66			75.6	6.0	10.0	29.3	5′ 5″	.3	133.6	11.0
17	2418.66	2031.66	1245.00	94.2	19.0	5.7	10.5	33.6	5′ 6″	.6	154.4	10.8
24	2213.15	1570.45	1850.00	19.6	40.9	5.7	7.3	28.2	5′ 7″	.8	145.2	11.1
30	2351.92	1360.00	1157.14	103.2	72.9	5.6	7.9	29.1	5′ 8″	.9	150.1	10.7
27	2752.38	1591.00	1090.00	152.5	72.9	5.7	7.5	28.7	5′ 9″	.7	153.4	11.5
31	2947.82	1657.91	2125.00	38.7	77.8	5.9	7.9	29.1	5′ 10″	.8	154.0	11.4
18	2417.85	1386.00	846.66	185.5	74.4	5.6	7.7	29.1	5′ 11″	.9	158.5	11.8
11	2493.75	1360.00	1400.00	78.1	83.3	5.2	8.8	29.3	6′ 0″	.6	162.9	12.0
4	2500.00	1200.00	900.00	177.7	108.3	5.5	10.2	30.2	6′ 1″	.5	172.5	11.3
3	3000.00	1833.33	1750.00	71.4	63.6	4.3	6.3	26.3	6′ 2″	.7	178.3	12.7
1	1500.00	3000.00	3000.00	−100.0	−100.0	4.0	3.0	26.0	6′ 3″	.0	175.0	16.0

TABLE NO. 38

SALESMEN

CRITERION: NUMBER OF DEPENDENTS BY INTERVALS OF ONE

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERI-ENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPEND-ENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCA-TION
87	2570.91	1446.66	1365.00	88.3	77.7	6.4	8.1	29.4	5′ 9″	0	154.14	11.6
50	2577.38	1614.75	1365.33	88.7	59.6	5.8	7.5	28.1	5′ 8 ½″	1	149.9	11.1
23	2231.57	1754.76	2716.66	−27.9	27.1	5.8	7.6	29.5	5′ 9 3-10″	2	159.3	11.6
6	2825.00	1616.66			74.7	6.3	11.7	34.7	5′ 8″	3	154.7	10.8
6	2100.00	1091.11	625.00	236.0	92.4	5.6	13.0	34.3	5′ 7 3-10″	4	149.5	10.3
1	2400.00	1200.00	1200.00	100.0	100.0	4.0	15.0	36.0	5′ 8″	5	143.0	12.0

experience increases are accompanied by salary increases up to about the age of forty. During this period the percentage of increase rises in each group. From this table we also note that experience increases are accompanied by age and dependent increases.

It is also true, as far as the table is reliable, that, as experience increases, a man's age increases, that he probably has held more jobs and may have more children as is shown in Table No. 36 on p. 76 where age was used as a working basis.

Considering the factor of height among salesmen (Table No. 37, p. 77) it is noticed that there is a slight tendency, though not without irregularities, for salary to increase, for a time at least, as height increases. Weight shows a tendency to increase with height as does education.

The results shown in Table No. 38, p. 78, should not be accepted as final, for there are but thirteen cases represented where salesmen have three or more children.

However, from the table it appears that the men with three or more children have on their various jobs received on the average less than the men with two or less children. Looking further at the variations in characteristics of those with three or more children as compared to those with two or less, it seems that those with three or more children have had more experience, are older, lighter in weight, smaller in stature and at the same time have had less education. It would be hard to determine the causal relations of the factors appearing above. They offer, however, an exceedingly good point of departure for future work in this field.

The tendencies that develop in Table No. 39 on p. 80 relative to weight add nothing new to what has already been discussed. There is an indication that as weight increases, height and salary also have a slight tendency to increase.

The increase in salary of married salesmen over the salary of single salesmen is shown in Table No. 40 on p. 81.

It is a much greater increase in this case than in the case of the clerks. With salesmen it may be the urge of added responsibility that forces them to earn more while clerks may be bound by our economic order.

TABLE NO. 39

SALESMEN

CRITERION: WEIGHT BY TEN-POUND INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
7	1925.00	1342.85	1125.00	71.1	11.1	5.0	7.8	28.7	5′ 7″	1.1	120–129	11.14
20	2058.88	1242.85	1183.33	73.9	53.3	5.8	7.7	28.5	5′ 7″	.6	130–139	10.55
41	2564.70	1642.64	1773.00	44.6	83.6	5.7	8.1	28.9	5′ 8 ¼″	1.0	140–149	11.12
42	2414.06	1530.60	1043.75	131.2	81.6	5.5	6.7	27.8	5′ 9″	.8	150–159	11.45
35	2464.80	1535.16	1387.77	77.6	60.5	5.5	8.0	29.5	5′ 9 2-3″	.7	160–169	11.75
14	3135.83	1702.50	1757.50	78.4	84.1	5.4	9.6	31.3	5′ 9 5-7″	.6	170–179	12.33
10	2521.40	1514.30			66.5	6.3	12.5	35.5	5′ 10 ½″	1.0	180–189	11.42
3	4600.00	1266.60	2000.00	130.0	33.3	5.3	11.0	29.7	5′ 11″	.3	190–199	11.66
1	3600.00	2100.00			71.4	7.0	20.0	49.0	5′ 6″	3.0	200–209	12.00

TABLE NO. 40

SALESMEN

CRITERION: MARRIED, SINGLE OR WIDOWER

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	MARRIED OR SINGLE	AVERAGE YEARS OF EDUCATION
80	2883.03	1719.85	1946.15	48.1	67.6	5.8	10.1	31.8	5′ 8 4-5″	.6	155.3	1	11.4
90	2164.28	1367.71	1167.30	85.4	58.2	5.4	6.4	27.0	5′ 8 4-5″	.6	151.5	2	11.2
3	2800.00	1433.33			95.3	7.0	11.7	37.0	5′ 8″	1.3	158.3	3	12.7

TABLE NO. 41

SALESMEN

CRITERION: YEARS OF SCHOOLING BY ONE-YEAR INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
6	2730.00	1775.00	1050.00	160.0	52.5	5.7	12.5	35.7	5′ 9 2-3″	1.2	165.2	unknown
1	1600.00	450.00	450.00	255.5	255.5	4.0	23.0	42.0	5′ 6″	4.0	145.0	7
12	2035.00	1244.44	900.00	125.5	99.0	5.9	11.8	32.5	5′ 8″	1.0	151.8	8
7	1807.14	745.71	760.00	136.8	143.2	5.0	6.1	24.4	5′ 9½″	.8	152.6	9
36	1824.07	1311.03	997.77	76.3	70.8	5.6	7.1	27.1	5′ 8 2-3″	.7	146.8	10
32	2850.00	1405.00	1350.00	111.1	102.8	5.8	8.4	29.5	5′ 7 3-8″	.9	154.3	11
45	2548.78	1570.85	1265.00	100.7	103.2	5.4	7.9	29.5	5′ 8 9-10″	.8	154.4	12
12	3210.00	1630.00	1166.66	175.1	96.9	5.6	8.2	29.6	5′ 9 1-3″	.4	157.6	13
11	2880.00	1450.00	1800.00	60.0	98.6	4.5	7.7	30.1	5′ 10″	1.1	155.7	14
4	2140.00	2242.00	2000.00	2.8	91.0	4.6	7.5	31.2	5′ 9″	.0	164.5	15
7	3840.00	2510.00	4433.33	22.4	52.9		6.3	29.8	5′ 10 ½″	.7	156.0	16

Original salary, salary on the fourth job back, and present salary show a tendency (extreme limits excluded) to increase as education increases, while age, experience and dependents show a decrease. (Table No. 41 on p. 82.)

Summary

A man who wishes to enter the field of selling may gain from these tables a slight knowledge of some of the characteristis, that accompany a good salesman. He must *not*, howevecr consider these indications as absolute and unchanging. They are mere indications which may be strengthened by more cases and perhaps changed in future generations.

Education and experience are two factors in this group with which many other factors vary. They should be carefully considered by persons studying this type of employment. The remuneration that salesmen receive is much greater than that of clerks, particularly in the married class. Such a condition should produce better standards of living, and it may, but better living conditions seem, according to the tables, to include a decrease in the number of dependents.[4]

A tendency among salesmen to have an increase in their incomes up to the time of middle life and then decrease should be mentioned, even though the cause cannot be determined. The habits of this group tend to be more irregular than those of other groups and their periods of work are more intense. It may be that these two things combine to sap their energy at a greater rate than in other fields thereby leaving them old men before their time. However, the good salesman may at this period enter the position of sales-manager or become a member of his firm and therefore be eliminated from the picture, leaving only the weakest of the group for consideration. Until we have more complete data it is impossible to make a true statement.

The Accounting Group

In this group it is also apparent, as is shown in Table No. 42, on p. 84, that high present salaries accompany salaries that have

[4] Table 64, p. 115.

TABLE NO. 42

ACCOUNTANTS

CRITERION: PRESENT SALARY BY $500 INTERVALS[5]

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
5	–1499	810.00	525.00	128.5	48.1	5.0	6.4	25.4	5′ 8″	.2	147.0	12.0
9	1500–1999	1033.33	1140.00	53.3	69.3	4.9	9.9	29.4	5′ 8 2-5″	.7	142.0	11.9
77	2000–2499	1341.42	1328.61	69.9	67.7	5.0	8.2	29.5	5′ 8 3-10″	.5	149.5	11.7
33	2500–2999	1457.57	1527.27	80.0	88.6	5.2	8.0	29.8	5′ 8 7-10″	.8	151.3	12.0
26	3000–3499	1915.38	1622.22	100.3	69.6	5.4	11.6	33.8	5′ 8″	1.0	152.6	11.8
13	3500–3999	2076.92	1687.50	122.2	80.5	5.9	11.4	36.6	5′ 8 3-10″	.5	166.4	11.8
20	4000–4499	2403.50	2000.00	112.5	76.8	5.8	13.2	36.5	5′ 8 4-5″	.8	161.7	12.6
2	4500–4999	2550.00			86.2	6.0	9.0	32.5	5′ 8″	.5	153.5	13.0
10	5000–5499	2695.00	2200.00	138.6	94.8	6.0	16.5	40.0	5′ 10 ½″	.9	162.3	10.1
4	6000–6499	2950.00			103.3	5.2	8.5	37.0	5′ 7 ½″	.5	157.5	13.0
1	6500–6999	2500.00			170.0	7.0	8.0	32.0	6′ 2″	1.0	180.0	16.0
1	7000–7499	2200.00			223.6	6.0	20.0	44.0	5′ 8″	.0	130.0	
2	10000–up	3050.00			227.5	6.0	18.0	39.5	5′ 7 ½″	.5	138.5	15.0

5. See footnote on page 85.

[5] Instructions for Reading Tables Nos. Relating to Accountants

A. Reading across Table No. 42, p. 00. Consider the third line of the table which starts with the number 77. Seventy-seven cases were found whose present yearly salary was in the $2000 to $2499 group. The average yearly salary that this group was receiving on the fourth job back was $1341.42. Their average original salary was $1323.61. The percent of increase of their present salary over their original salary was 69.9 while the percent of increase of their present salary over their fourth job back was 67.7. They had an average of 5 jobs and 8.2 years of experience. This group averages 29.5 years of age and is 5′8.3″ tall. They average .5 of a dependent each, weigh 149.5 pounds and have had 11.7 years of schooling.

B. Reading down each column. The first column at the left is headed number of cases and means, starting with the 5 at the top of the column, that the statistics of 5 cases were averaged to give the figures in the line at the right of 5. There were 9 cases in the next group, 77 in the following one and 33, 26, 13, 20, 2, 10, 4, 1, 1 and 2 in the succeeding groups.

Column two shows the present salary range for each group as follows: the first group includes all salaries between zero dollars and $1499 a year, the second group starts at $1500 and goes to $1999 while the third group goes from $2000 to $2499. The other groups in order are: $2500 to $2999, $3000 to $3499, $4000 to $4499, $4500 to $4999, $5000 to $5499, $6000 to $6499, $6500 to $6999, $7000 to $7499 and $10,000 and over.

Column three shows the average salary received by each group on the fourth job back while column four shows the average original salary of each group.

Column five shows the percent of increase of the average present salary of each group over the average original salary and column six gives the percent of increase of the average present salary of each group over the average salary of the fourth job back.

The succeeding columns show in order the following: average number of jobs held by each group, the average number of years of experience, the average age, the average height, the average number of dependents, the average weight and in the last column the average number of years of schooling.

TABLE NO. 43

ACCOUNTANTS

CRITERION: SALARY ON 4TH JOB BACK BY $500 INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
7	2187.50	0– 999	541.66	303.8	191.7	4.5	10.1	25.5	5′ 8 7-10″	1.2	156.0	12.1
74	2331.21	1000–1499	1181.42	97.3	86.5	5.0	8.1	29.3	5′ 8 6-10″	.6	149.0	11.8
53	2843.39	1500–1999	1553.70	83.0	62.5	5.2	9.6	31.9	5′ 8 2-10″	.6	152.7	12.0
23	3588.84	2000–2499	2360.00	52.1	59.5	5.7	12.0	35.5	5′ 8 4-10″	.6	156.2	12.2
12	4586.92	2500–2999	2500.00	83.5	66.8	6.3	10.9	34.0	5′ 8 1-10″	1.1	157.0	13.4
20	4834.78	3000–3499			48.8	6.3	12.1	41.2	5′ 9 4-10″	1.0	170.7	13.6
10	4980.90	3500–3999	3533.33	41.0	32.8	5.4	14.4	39.3	5′ 8 7-10″	.7	158.9	13.8
2	5010.00	4000–4499			17.9	7.0	19.5	45.0	5′ 9″	2.5	155.0	14.0
2	3500.00	9000–6499				7.5	21.0	41.5	5′ 10 5-10″	.5	184.0	12.5

been relatively high from the beginning. It would seem, therefore, that one ought to secure a high salary from an employer on the first job if a high salary is desired later. This reasoning is hardly tenable since there may have been other factors that also varied directly with present salary. This seems to be the case, for those with higher salaries are also taller, older and have had more experience. Just why the percentage of increase of the present job over the other two under discussion should increase as the present salary increases is not clear unless it is that reward in this field is more rapid as the years of experience increase.

In Table No. 43, p. 86, a high salary on the fourth job back is accompanied by a high original salary, and a relatively high present salary. It appears, however, that the percentages of increase of the present salary over that of the fourth back have a tendency to diminish as it goes toward the upper limits. To this may be added the statements that in the upper salary groups men are older, have more experience, have held more jobs, are slightly taller, and have had more education. To say that a man must possess all of these qualifications to be numbered in the high salaried groups is wrong, but it does seem that some men advanced who were tall, others advanced who had more education, while others who possessed a great amount of experience went forward. It *may* even be that these factors are causes for the increased salaries, *but at present we are not warranted in making that assumption.*

Those men who received high initial salaries also appear to be those who are older and have had more education, as we can infer from Table No. 44 on p. 89.

Among accountants, Table No. 45 on p. 90, a large number of positions seem to accompany increases in salary, although the percentage of increase of the present salary over that of the fourth back is less for each new job accepted. Age and experience also show an increase.

Increases in experience according to Table No. 46, p. 91, accompany increases in salary. The percentage of increase of present salary over salary of the fourth job back seems to remain constant for each extra year of experience, while number of jobs, age and dependents show an increase.

The characteristics that accompany increased age as shown in Table No. 47, p. 92, are an increase in the salary of all the jobs considered, and an increase in experience. A fact to be noted is that the percentage of increase of present salary over that of the fourth job back decreases as age increases. This may show that the men are approaching their limit in this particular field. If the age limits were carried higher, we might even find a decrease in salary at a certain age, as was indicated with salesmen near middle life. It is just a conjecture at the present time, but it would be valuable to know at what age (if it does) each profession reaches its maximum and starts on the decline.

In the accountant group (Table No. 48, p. 93) experience, weight and education are all greater with the tall individual.

Dependents, here, as in former cases, present an interesting table on page number 94. From this table it seems that men actually increase in salary until the third child comes, and from there on they tend to decrease. Is this not surprising when we note that those with three or more dependents have had more experience, are older and slightly heavier?

The heavier an accountant is, as indicated in Table No. 50, p. 95, the more experience he has had on the average. It is also to be noted that he is older, taller, has had more education, and in this case seems to have more dependents.

Table 51, p. 96, leads to the statement that married accountants seem to have been in the higher salary groups from the time they started to work. Their present salary is certainly much greater than that of the single man. Does this mean that men who enter accounting do not feel justified in getting married until the earlier, financially leaner years of their training are over? We cannot tell from this study, but it might make an interesting study in the future. The married men are slightly older, have had a little more experience and a few more jobs, but the percentage increase of their present salary over that on the fourth job back has not been any greater than that of the single men.

Among accountants there is a tendency (Table No. 52, p. 97) toward a higher salary if a man has more education. The other factor that shows variation with education is height. This has recurred so persistently in all of the figures of this study that it seems important enough to suggest as a separate investigation.

TABLE NO. 44

ACCOUNTANTS

CRITERION: ORIGINAL SALARY BY $500 INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
6	2200.00		000– 999	193.3		4	10.0	27.2	5′ 9″	1.0	160.8	11.6
35	2254.28		1000–1499	80.3		4	6.3	27.1	5′ 8 6-10″	.5	147.6	12.1
27	2815.55		1500–1999	60.9		4	7.4	29.2	5′ 7 8-10″	.6	151.3	12.2
5	3420.00		2000–2499	52.0		4	13.8	35.4	5′ 9″	1.0	155.6	11.8
2	3750.00		2500–2999	36.4		4	5.0	30.0	5′ 7″	1.0	162.5	12.5
3	4666.66		3500–3999	24.4		4	10.3	39.0	5′ 7 6-10″	.0	149.3	13.3

TABLE NO. 45

ACCOUNTANTS

CRITERION: NUMBER OF JOBS BY ONE-JOB INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
						4	7.5	28.5	5′ 8 3-10″	.6	151.2	12.0
75	2569.70	1404.66	1404.66	82.9	82.9	5	8.4	31.5	5′ 7 4-5″	.3	148.4	12.2
36	2894.16	1552.77			86.3	6	11.2	33.9	5′ 8 9-10″	.8	153.8	11.9
50	3500.40	1836.00			90.6	7	13.2	36.0	5′ 8 9-10″	.6	157.9	11.9
38	3145.26	2100.26			49.7	8	18.8	40.0	5′ 9″	2.2	164.0	13.8
4	3633.33	2875.00			26.3							

TABLE NO. 46

ACCOUNTANTS

CRITERION: YEARS OF EXPERIENCE BY FIVE-YEAR INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
38	2539.47	1510.51	1457.40	74.2	68.1	4.3	1– 4	26.5	5′ 7 1-10″	.6	146.4	12.6
72	2685.61	1473.01	1301.85	106.2	82.3	5.1	5– 9	29.0	5′ 8 3-10″	.5	149.9	11.7
55	3168.18	1736.00	1255.83	152.2	82.4	5.7	10–14	33.7	5′ 8 3-10″	.7	157.4	11.7
19	3157.89	1737.36	1537.50	105.3	81.7	5.4	15–19	38.6	5′ 7 3-5″	.6	149.2	12.1
15	3850.66	2116.66	2400.00	60.4	81.9	6.5	20–24	41.7	5′ 9 1-5″	1.1	159.8	12.1
3	6330.00	4033.33			56.9	6.7	25–29	44.0	5′ 9″	.3	168.3	12.3
1	2400.00	1600.00			50.0	7.0	30–34	53.0	5′ 8″	1.0	135.0	11.0

TABLE NO. 47

ACCOUNTANTS

CRITERION: AGE BY FIVE-YEAR INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERI-ENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPEND-ENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCA-TION
17	2082.35	1270.58	1275.00	63.3	63.8	4.2	3.6	21–24	5′ 8 3-10″	.5	143.0	12.4
65	2529.23	1316.92	1260.93	100.5	92.0	5.0	6.3	25–29	5′ 8 1-5″	.7	150.0	11.8
56	3090.89	1701.42	1585.29	94.9	81.6	5.4	9.4	30–34	5′ 9″	.7	155.6	12.3
34	3653.23	2087.05	1612.50	126.5	75.0	5.4	12.7	35–39	5′ 7 9-10″	.3	151.4	11.8
21	3897.61	2100.95	1825.00	113.5	85.5	6.0	18.2	40–44	5′ 8 3-5″	1.0	159.5	12.5
7	3971.42	2971.42			33.6	7.0	18.6	45–49	5′ 10″	.4	166.4	11.7
3	3066.66	2000.00			53.3	6.1	19.7	50–54	5′ 9 1-5″	2.0	158.3	12.0

TABLE NO. 48

Accountants

CRITERION: HEIGHT BY ONE-INCH INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
1	2300.00	1350.00			70.3	5.0	7.0	27.0	5′ 1″	.0	142.0	11.0
3	2533.33	1400.00			80.9	5.3	10.0	30.7	5 3″	.7	126.0	10.3
6	3033.33	1708.33	1600.00	89.5	77.5	4.5	8.2	29.2	5′ 4″	.0	139.3	12.2
13	2466.92	1823.07	1591.66	54.9	35.3	5.2	8.9	29.8	5 5″	.2	141.2	11.6
24	2834.16	1595.83	1412.50	100.6	77.5	5.6	10.2	32.6	5′ 6″	.8	141.6	11.4
23	3321.30	1878.26	1342.30	147.4	76.8	4.7	9.1	31.3	5′ 7″	.4	150.0	12.5
39	3069.47	1636.57	1337.50	129.4	87.5	5.8	11.7	34.1	5′ 8″	.7	151.1	12.8
16	2743.75	1896.87	1487.50	84.4	44.6	5.0	9.4	31.0	5′ 9″	.7	155.7	11.9
28	3135.35	1526.78	1385.00	126.3	105.3	5.4	10.1	32.2	5 10″	1.0	158.6	11.9
26	2851.53	1640.38	1258.33	126.6	73.8	5.1	8.3	33.0	5′ 11″	.4	162.8	12.0
13	3023.07	1526.92	1300.00	132.5	97.9	5.8	10.6	30.9	6′ 0″	.5	169.2	12.6
7	2714.28	1602.85	2400.00	13.0	69.3	5.7	10.0	32.1	6′ 1″	1.1	162.6	12.3
3	4166.66	2083.33	1500.00	177.7	100.0	6.0	10.3	32.0	6′ 2″	1.0	190.0	13.0
1	5200.00	3600.00			44.4	6.0	12.0	30.0	6 5″	2.0	180.0	12.0

TABLE NO. 49

ACCOUNTANTS

CRITERION: NUMBER OF DEPENDENTS BY INTERVALS OF ONE

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERI-ENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPEND-ENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCA-TION
121	2934.79	1666.03	1380.00	112.6	76.1	5.2	10.5	32.0	5′ 8″	0	151.6	11.9
46	2956.73	1711.95	1350.00	119.0	72.7	5.4	9.6	30.9	5′ 9 3-10″	1	152.8	12.1
27	3301.11	1856.29	1700.00	94.1	77.8	5.6	10.6	32.6	5′ 8 7-10″	2	157.3	12.5
5	2580.00	1490.00	1400.00	84.2	73.1	5.2	7.6	33.0	5′ 9 1-5″	3	152.8	12.0
3	3200.00	1683.33	1275.00	150.9	90.0	5.3	13.0	33.0	5′ 9″	4	167.7	12.0
1	3200.00	1400.00			128.5	6.0	23.0	52.0	5′ 10″	5	150.0	13.0

TABLE NO. 50

ACCOUNTANTS

CRITERION: WEIGHT BY TEN-POUND INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
2	3000.00	1500.00	1500.00	100.0	100.0	5.0	13.5	33.0	5′ 5″	.5	110–119	11.5
8	3025.00	1681.25			79.9	5.8	8.8	31.0	5′ 4 7-10″	.6	120–129	11.0
37	2745.13	1471.08	1310.00	109.5	86.6	4.9	10.1	31.1	5′ 7 3-10″	.4	130–139	12.2
43	2818.60	1582.55	1452.63	94.0	78.1	5.1	8.9	29.9	5′ 5 4-5″	.6	140–149	11.6
46	2954.56	1628.26	1369.23	115.7	81.4	5.4	9.2	32.3	5′ 8 4-5″	.8	150–159	12.6
29	1773.44	1774.48	1472.22	20.4	−0.5	5.5	8.8	31.2	5′ 9 7-10″	.6	160–169	11.7
20	3479.50	1843.50	1308.33	165.9	88.7	5.6	11.6	34.6	5′ 6 7-10″	.7	170–179	12.3
11	4177.27	1381.81	1860.00	124.5	202.3	5.4	13.1	35.7	5′ 11 ½″	.8	180–189	12.7
3	3033.33	1900.00	1200.00	152.7	59.6	5.3	12.0	41.3	5′ 9″	.7	190–199	14.0
2	3100.00	3650.00			−15.0	6.5	16.5	38.0	5′ 10 ½″	2.0	200	11.5
1	3300.00	750.00	750.00	340.0	340.0	4.0	14.0	31.0	5′ 10″	4.0	210	
1	3500.00	2250.00			5.55	7.0	10.0	34.0	6′ 2″	1.0	225.	11.0

TABLE NO. 51

ACCOUNTANTS

CRITERION: MARRIED, SINGLE OR WIDOWER

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	MARRIED OR SINGLE	AVERAGE YEARS OF EDUCATION
117	3373.09	1929.11	1515.38	122.5	74.8	5.7	11.9	34.9	5′ 7 1-5″	.7	156.8	1	12.2
84	2489.16	1411.90	1356.38	83.5	76.2	4.8	7.1	27.9	5′ 8 2-5″	.5	147.6	2	12.0
2	3200.00	1410.00			126.9	5.5	11.5	37.5	5′ 10″	1.5	160.0	3	12.0

TABLE NO. 52

ACCOUNTANTS

CRITERION: YEARS OF SCHOOLING BY ONE-YEAR INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
12	3723.33	1804.16	750.00	396.4	106.3	5.8	11.2	36.7	5′ 9″	.7	157.7	0–5.9
2	2200.00	2000.00	1000.00	120.0	10.0	5.0	9.5	35.5	5′ 6″		155.0	6
1	2100.00	1000.00			110.0	7.0	5.0	26.0	5′ 6″	1.0	129.0	7
6	3100.00	1583.33	1633.33	89.7	95.7	5.3	13.2	32.8	5′ 7 1-3″	.3	153.0	8
2	2200.00	1200.00			83.3	6.0	12.0	38.0	5′ 5 ½″		130.0	9
14	2562.85	1511.42	1200.00	113.5	69.5	5.1	10.4	30.9	5′ 9″	.6	156.2	10
52	2842.50	1657.69	1388.09	104.7	71.9	5.2	9.6	30.9	5′ 8″	.6	151.8	11
53	2867.92	1726.41	1584.21	81.0	66.1	5.3	10.1	32.0	5′ 9″	.7	150.8	12
14	2364.28	1160.71	941.66	151.0	103.6	5.1	8.9	29.4	5′ 8 4-5″	.6	150.5	13
25	3419.60	2000.00	1545.83	121.2	70.9	5.2	10.1	33.6	5′ 8″	.6	158.7	14
12	2875.00	1666.66	1270.00	126.3	72.5	5.6	8.4	40.5	5′ 7 3-10″	.9	147.0	15
10	4299.00	2070.00	1450.00	196.4	107.6	5.4	8.2	8.32	5′ 10″	.7	161.0	16

Summary

As an accountant a man starts his business career with a higher salary than he would have, had he entered certain other types of business. His progress, however, seems extremely slow for a time. This, probably, is the period in which he is gaining his experience or technical knowledge of his subject. In this study we have only considered the effect of formal education, but a study should be made in which formal education is separated from that of specialized education in the field under discussion. After the period of slow advancement noted above the accountant appears to receive very excellent remuneration. He is able, it seems, to continue to rise for a number of years, reaching, as he does, salaries that are commensurate with those of professional groups.

Those studying occupations in order to determine upon a life work should notice that in this field the financial reward during the years generally considered to be those in which a man has his greatest responsibilities is great enough to remove the worry attending these years in some other fields of endeavor.

The Engineering Group

The engineer who is at present receiving a high salary according to Table No. 53, p. 99, was also receiving a high salary for his group on the fourth job back and originally. Looking, however, at original salary in this table, we note that the variation is not extremely great. Those who were in the upper groups have consistently made greater advances, proportionately, than those receiving the lower salaries. The other tendencies accompanying high salaries are increased age, experience, and a greater number of jobs.

A high salary on the fourth job back seems to be accompanied by (Table No. 54, p. 101) an original salary that was relatively high and also a present salary that has a tendency to vary in the same manner. The men in the high salary groups have held a few more jobs than those in the lower groups, and are older and have had more experience.

Practically the same indications as in the table above hold for original salary groups in Table No. 55 on p. 102. An engineer's

TABLE NO. 53

ENGINEERS

CRITERION: PRESENT SALARY BY $500 INTERVALS[6]

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
1	1000–1499	1200.00	1200.00	4.1	4.1	4.0	3.0	24.0	5′ 8″	1.0	145.0	16.0
9	1500–1999	1211.11	1238.33	41.8	44.4	4.4	4.2	26.0	5′ 8 4-5″	2.4	152.3	14.7
55	2000–2499	1363.46	1267.64	77.4	65.0	5.4	7.0	30.0	5′ 8 4-5″	.8	152.7	14.6
24	2500–2999	1737.91	1658.33	65.8	58.2	5.6	8.5	32.4	5′ 9″	1.1	158.9	14.0
28	3000–3499	1811.42	1694.53	91.7	79.4	5.1	9.9	34.0	5′ 9 3-5″	1.4	170.6	14.6
36	3500–3999	2005.55	1661.53	125.6	86.9	5.5	10.2	34.9	5′ 9 2-5″	.5	162.2	15.1
12	4000–4499	2404.16	2500.00	70.0	76.7	5.8	10.1	36.1	5′ 8 1-10″	1.0	158.1	15.8
10	4500–4999	2460.00	3600.00	31.9	93.0	5.8	11.1	36.4	5′ 6 4-5″	.8	153.7	14.8
12	5000–5499	2458.33	2500.00	110.0	113.5	5.5	10.8	37.2	5′ 8 7-10″	.8	165.2	16.1
1	5500–5999	2000.00	2000.00	187.5	187.5	4.0	6.0	29.0	5′ 8″	.0	150.0	16.0
8	6000–6499	2437.50	1500.00	316.6	156.4	6.1	15.0	41.7	5′ 9 3-5″	.4	161.8	14.9
1	6500–6999	3000.00			125.0	7.0	18.0	42.0	5′ 11″	3.0	165.0	16.0
2	7500–7999	2250.00	1200.00	545.8	244.4	5.0	8.5	35.0	6′ ½″	1.0	197.5	12.0
1	10000–up	2200.00			354.0	7.0	25.0	45.0	5′ 6″	.0	140.0	16.0

[6] See footnote on page 100

Instructions for Reading Tables Nos. 53 to 63 Relating to Engineers

A. Reading across Table No. 53, p. 99. Consider the third line of the table which starts with the number 55. Fifty-five cases were found whose present yearly salary was in the $2000 to $2499 group. The average yearly salary that this group was receiving on the fourth job back was $1363.46. Their average original salary was $1267.64. The percent of increase of their present salary over their original salary was 77.4 while the percent of increase of their present salary over their fourth job back was 65.0. They had an average of 5.4 jobs and 7.0 years of experience. This group averages 30 years of age and is 5′8 4-5″ tall. They average .8 of a dependent each, weigh 152.7 pounds and have had 14.6 years of schooling.

B. Reading down each column. The first column at the left is headed number of cases and means, starting with the 1 at the top of the column, that the statistics of one case was given in the line to the right of one. There were 9 cases in the next group, 55 in the following one and 24, 28, 36, 12, 10, 12, 18, 1, 2 and 1 in the succeeding groups.

Column two shows the present salary range for each group as follows: the first group includes all salaries between zero dollars and $1499 a year, the second group starts at $1500 and goes to $1999 while the third group goes from $2000 to $2499. The other groups in order are $2500 to $2999, $3000 to $3499, $3500 to $3999, $4000 to $4499, $4500 to $4999, $5000 to $5499, $5500 to $5999, $6000 to $6499, $6500 to $6999, $7500 to $7999 and over $9999.

Column three shows the average salary received by each group on the fourth job back while column four shows the average original salary of each group.

Column five shows the percent of increase of the average present salary of each group over the average original salary and column six gives the per cent of increase of the average present salary of each group over the average salary of the fourth job back.

The succeeding columns show in order the following: average number of jobs held by each group, the average number of years of experience, the average age, the average height, the average number of dependents, the average weight and in the last column the average number of years of schooling.

TABLE NO. 54

ENGINEERS

CRITERION: SALARY OF 4TH JOB BACK BY $500 INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
71	2569.14	1000–1499	1166.87	120.1	105.5	5.0	7.1	29.7	5′ 9 1-10″	.9	156.6	15.1
50	3223.20	1500–1999	1606.66	100.6	84.2	5.5	9.9	33.3	5′ 9 3-10″	.9	161.9	14.8
54	3762.90	2000–2499	2150.00	75.0	67.2	5.5	9.7	34.8	5′ 8 4-10″	1.0	156.7	15.2
3	4833.33	2500–2999	2500.00	93.3	75.8	5.7	10.3	35.3	5′ 6 3-10″	.7	148.0	14.3

TABLE NO. 55

ENGINEERS

CRITERION: ORIGINAL SALARY BY $500 INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
33	2606.60		1000–1499	108.5		4	6.2	28.9	5′ 8 9-10″	.6	153.8	14.6
15	3226.66		1500–1999	84.4		4	7.2	30.6	5′ 10″	.5	163.1	15.7
14	3510.00		2000–2499	56.0		4	7.1	31.5	5′ 8″	1.4	150.2	15.3
1	5200.00		2500–2999	89.1		4	10.0	34.0	5′ 9″	2.0	155.0	16.0

TABLE NO. 56

ENGINEERS

CRITERION: NUMBER OF JOBS BY ONE-JOB INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
65	3099.69	1594.46	1594.46	94.4	94.4	4	6.9	30.5	5′ 9″	.8	155.4	15.0
41	3278.03	1807.31			81.3	5	7.6	32.3	5′ 9 2-5″	.8	165.3	14.3
39	3203.84	1714.87			86.8	6	9.0	32.9	5′ 8 9-10″	1.2	164.2	14.6
51	3799.40	2125.20			78.7	7	13.0	37.6	5′ 8 3-5″	1.0	156.8	15.1
3	3400.00	3100.00			9.6	8	11.3	37.7	5′ 10″	2.0	178.3	15.7
1	2400.00	1600.00			50.0	9	22.0	45.0	5′ 5″	1.0	120.0	

TABLE NO. 57

ENGINEERS

CRITERION: YEARS OF EXPERIENCE BY FIVE-YEAR INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
36	2477.77	1481.94	1420.83	74.3	67.1	4.4	1– 4	26.6	5′ 9 1-10″	.6	156.2	15.1
82	3175.73	1756.46	1701.66	86.6	80.8	5.4	5– 9	30.4	5′ 9″	1.5	160.1	14.7
46	3935.55	1979.54	1980.00	98.7	98.8	5.7	10–14	36.2	5′ 8 3-5″	.9	160.3	14.4
24	3545.83	1475.00	1480.00	139.5	140.3	6.1	15–19	41.0	5′ 8 1-5″	.8	157.5	14.9
9	3288.88	2200.00			49.4	6.8	20–24	45.1	5′ 8 7-10″	2.5	174.8	14.1
3	7330.00	2233.33	1500.00	388.6	228.2	6.0	25–29	49.0	5′ 8″	1.0	148.3	16.0

TABLE NO. 58

ENGINEERS

CRITERION: AGE BY FIVE-YEAR INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
3	1733.33	1166.66	1100.00	57.5	48.5	4.3	3.0	20–24	5′ 6 1-5″	.3	156.0	15.0
63	2626.98	1488.09	1425.92	84.2	76.5	5.0	4.6	25–29	5′ 9 2-5″	1.0	153.9	15.0
66	3376.76	1759.20	1758.26	92.0	91.9	5.3	7.9	30–34	5′ 8 4-5″	.7	161.1	14.6
27	3776.66	2035.18	1471.42	156.6	85.5	5.8	12.2	35–39	5′ 9 1-10″	1.2	163.1	14.0
22	4065.90	2393.18	2333.33	74.2	69.8	6.2	15.1	40–44	5′ 9″	.8	167.2	15.3
15	4286.00	2433.33	2550.00	68.0	76.1	6.3	17.9	45–49	5′ 7 1-10″	1.5	156.9	14.8
4	4375.00	2400.00			82.2	6.0	20.0	50–54	5′ 10″	2.0	174.2	11.7

TABLE NO. 59

ENGINEERS

CRITERION: HEIGHT BY ONE-INCH INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
2	2200.00	1250.00			76.0	7.0	13.5	39.0	5′ 3″	.5	180.0	15.0
3	3333.33	1400.00	1400.00	138.0	138.0	5.7	7.1	28.7	5′ 4″	5.7	131.0	13.0
10	3530.00	1830.00	1666.66	111.8	92.8	5.8	11.5	35.4	5′ 5″	.6	138.0	15.3
13	3836.15	1881.53	1300.00	195.0	103.8	6.2	13.2	38.5	5′ 6″	1.4	144.2	14.6
23	3294.78	2238.63	1916.66	71.9	47.7	5.1	9.4	34.4	5′ 7″	1.4	152.9	15.2
39	3226.57	1827.63	1850.00	74.4	76.5	5.4	9.6	33.3	5′ 8″	1.0	155.8	14.9
18	3202.77	1783.33	1575.00	103.3	79.5	5.2	7.3	31.0	5′ 9″	.7	150.7	14.5
43	3211.62	1762.85	1406.00	128.4	82.1	5.4	8.3	32.3	5′ 10″	.7	163.7	14.6
23	3766.08	1860.00	1585.71	137.5	102.4	5.3	8.5	33.2	5′ 11″	.6	166.1	15.4
12	2833.33	1891.66	1466.66	93.1	49.7	5.7	8.5	32.2	6′ 0″	1.2	165.7	14.9
7	3607.14	1828.57	1500.00	140.4	97.2	6.0	8.4	33.4	6′ 1″	.1	202.4	14.6
5	3700.00	1410.00	1500.00	146.6	162.4	4.8	7.6	30.7	6′ 2″		180.1	12.2
2	2700.00	1575.00			71.4	5.5	11.5	33.5	6′ 3″	3.0	227.5	16.0

TABLE NO. 60

ENGINEERS

CRITERION: NUMBER OF DEPENDENTS BY INTERVALS OF ONE

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
113	3455.75	1774.46	1605.00	115.3	94.9	5.4	8.6	32.6	5′ 9″	0	160.2	14.9
37	3062.70	1877.02	1570.00	95.0	63.1	5.6	9.1	35.6	5′ 8 9-10″	1	158.0	15.0
22	3120.00	1770.47	1665.00	87.3	76.2	4.8	8.0	31.7	5′ 9 3-10″	2	156.2	14.5
19	3658.88	2188.82	1575.00	132.3	67.1	5.9	12.4	37.5	5′ 8 1-5″	3	160.2	14.2
7	3071.42	2057.14	2000.00	53.5	49.3	5.6	12.8	36.4	5′ 7 4-5″	4	168.6	15.3
1	2400.00	1800.00			25.0	7.0	6.0	29.0	6 0″	5	180.0	15.0
1	2500.00	2000.00			25.0	7.0	24.0	53.0	5′ 8″	6	172.0	12.0

salary as Table No. 56 on p. 103 shows, does not seem to change much as the number of jobs he holds increases. There is an increase, however, in age and experience.

The years of experience that a man has had in engineering increase as his salary increases, as is shown in Table No. 57 on p. 104. We also notice that the percentage of increase of the present salary over that of the fourth back increases with extra years of experience. The greater the years of experience the more jobs a man is likely to have held, and the older he is likely to be.

We note (Table No. 58 on p. 105) that as an engineer's age increases his salary increases. It is also noticeable that as age increases so does experience and number of jobs.

It is noticeable (Table No. 59 on p. 106) that the tall individuals have had less experience and have fewer children, while education in this occupation remains about the same for all. The number of years of education probably should be about the same for all men in this group since, at the present time, to become a full-fledged engineer necessitates the completion of standard engineering courses.

When dependents are studied as a factor among engineers (Table No. 60, p. 107) a tendency is shown to increase in salary up to and including the third child, but from there on the salary shows a decrease. The percentage of increase of present salary over salary in the fourth job back steadily declines with an increase in dependents. It must be remembered in reviewing this table that the number of cases in the last three groups is very small (9) and should not be relied upon, unless the tendency remains after more cases have been added in a future study.

In Table No. 61 on p. 112, where the weight of engineers is distributed, we find a general increase in age, height, and dependents.

In the engineering field married men (Table No. 62 on p. 113) seem to have an advantage over the single men in compensation, although they have not held any more jobs. The married men, however, are older and have had a number of extra years of experience. The fact that they have had more experience but not a greater number of jobs would indicate that the married group remained longer, on the average, in a given position.

From our educational table on p. 114 we notice that neither salary nor number of jobs change as education increases.

Summary

Engineers, the only professional group considered in this study, show certain tendencies relative to the group studied that might be helpful to one attempting to determine upon a future occupation. Such a one should not lose sight of the fact that this material came from an employment agency and that the results are limited because of the small number of cases. For instance, four years of college seem to be a prerequisite in this work. The salary is better than in any of the other occupations we have studied; even the increase of the salary of married men over that of single men is greater than in any of the other groups. In this work, the married men, who have more experience to their credit, do not appear to have changed jobs any more than the single men. This probably indicates that married men remain longer on a given job than do single men. Whether this is due to conditions of employment or to the type of work each group is in can only be determined by further study.

Occupational Comparisons

Table No. 64 on p. 115 using the median points for each variable in each type of work is the basis for this discussion.

A consideration of the median original salaries shows that the clerical group started work at a much lower rate ($897.95) than any of the other groups. Salesmen, with a salary of $1,156.25 a year, are next, and they in turn are followed by the accountants with $1,471.42 a year. The engineers, with $1,484.84 a year, are practically the same as the accountants. These beginning salaries may well be considered in connection with the education required in each group. The median salesman, who has one year of education more than the median clerk, receives an extra two hundred and fifty dollars a year to begin with, while the median accountant with two additional years has an original salary almost six hundred dollars greater than the clerk. The median engineer with six years of education more than the clerk has

the same additional salary above clerks in the beginning that the accountant does. At first thought this would seem unfair, or at least not worth the effort and money that the engineering student must spend to prepare for his life's work. The test comes, however, when we study the medians of present salary. The median clerk is able to advance his salary about eight hundred dollars, the median salesman about nine hundred dollars, the median accountant about twelve hundred dollars, and the median engineer over seventeen hundred dollars. Considered from the point of view of ultimate gain for the extra years of education, the following is the case: the clerk is able to advance at the rate of about one hundred dollars a year, and the salesman, with one more year of education, increases at about the same rate. Two years of education for the accountant permits of an average yearly increase of about one hundred and twenty-five dollars, while the engineer increases on the average at the rate of one hundred and ninety-five dollars annually for his six additional years of education.

The median salary is received by clerks after seven years of experience, while a salesman needs eight years of experience, the accountant nine and one-half, and the engineer eight and nine-tenths.

The median age for the clerks is twenty-four and eight-tenths years, that of the salesmen twenty-eight and seven-tenths, while the accountants are thirty-one and eight-tenths years of age, and the engineers thirty-two and six-tenths. This indicates that the clerk reaches the median salary for clerks eight years before the engineer reaches his median. If we were to allow the clerk the average yearly increase for clerks, he would have an income at thirty-two years of age of about twenty-four hundred and seventy-five dollars, as compared to the thirty-two hundred that the engineer receives. From this time forward, it is easy to see that the median engineer is financially in a much better position than the clerk. The same is true in different ratios when the salesmen and accountants are compared with the engineer. It seems from these figures that the extra years of education that must be taken to become an engineer are paid for eventually. We must not carry away from this discussion

the idea that education is entirely responsible for this increase in income. Intelligence or some other factor may be the real reason why these people were able to go through an engineering course. Without the engineering course they might have made an equal salary in another field.

The median height of men in selling and engineering is above normal. This may mean that height is a factor in these two fields in aiding a man to reach the top. We do not know this, however, for our method is not one that gives information on this point.

The question of dependents is rather interesting. The clerks, who are the youngest, the poorest paid, the shortest, and the least educated, are those with the greatest number of dependents. This is even more significant when we consider that the percentage of married men to single men is lower in this group than in any of the others. The significance of this from an economic point of view should be determined in a future study.

As we look at the column in which percentage of married men to single men is shown for each group, we notice that higher salaries are more conducive to marriage. Although however, twice as many engineers as clerks are in the married class, still the clerical group leads in number of children. This may not be a vocational guidance problem directly, and yet many of our figures seem to indicate that men with children, at least to the number of two, are usually found in the upper salary groups. The reason for this is not apparent in our figures, but it suggests a problem that should be studied in more detail.

The next comparison may be made from Table No. 65 on p. 116 where the average salary of the single group in each occupation is compared with the average salary of the married group. The clerk's increase is about one hundred and fifty dollars—hardly enough to warrant the increased responsibility, particularly when we consider that the gross income is less than seventeen hundred dollars (this was for the period considered in this study). For salesmen the increase is about seven hundred dollars. This is an increase of almost thirty-three per cent over the single men. The total salary for salesmen is much better than among the clerks, but not as good as that obtained by

TABLE NO. 61

ENGINEERS

CRITERION: WEIGHT BY TEN-POUND INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERI-ENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPEND-ENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCA-TION
1	1800.00	1000.00			50.0	6.0	5.0	25.0	5′ 4″	1.0	118–	
5	2936.00	1752.00			67.5	6.8	11.2	32.0	5′ 5 3-5″	.6	120–129	14.8
15	3158.60	1806.66	1500.00	110.5	74.8	5.5	9.0	32.2	5′ 7 2-5″	.9	130–139	14.9
34	3560.00	1878.48	1692.14	110.3	89.5	5.5	9.8	33.4	5′ 7 4-5″	.6	140–149	15.1
60	3173.00	1772.49	1770.00	79.2	79.0	5.1	8.4	32.6	5′ 8 ½″	.8	150–159	15.0
35	3192.85	1755.71	1366.66	133.6	81.8	5.5	8.3	32.0	5′ 9 4-5″	.8	160–169	14.9
14	3663.07	2036.92	1350.00	171.3	79.8	5.8	10.7	36.4	5′ 9 4-5″	1.3	170–179	15.3
14	3110.71	1607.14	1850.00	68.1	93.5	5.4	9.3	33.4	5′ 10 7-10″	1.4	180–189	12.8
11	3500.00	2122.72	1650.00	112.1	64.8	5.5	10.6	36.6	5′ 10 2-5″	1.0	190–199	14.7
3	3500.00	2200.00	1400.00	150.0	59.0	5.0	7.7	33.7	5′ 9 2-3″	.3	200–209	15.0
5	4000.00	2040.00			96.0	6.0	9.6	37.2	5′ 10″		210–219	14.5
2	5600.00	2100.00	1200.00	366.6	166.6	6.0	9.5	34.0	6′ 1 ½″	.5	220–229	12.0
1	3000.00	1800.00			66.6	6.0	20.0	41.0	6′ 3″	4.0	275–	16.0

TABLE NO. 62

ENGINEERS

CRITERION: MARRIED, SINGLE OR WIDOWER

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	MARRIED OR SINGLE	AVERAGE YEARS OF EDUCATION
118	3701.13	2011.92	1806.45	58.1	41.9	5.7	11.1	35.8	5′ 8 ½″	1.0	160.1	1	14.4
79	2800.63	1564.48	1459.67	91.8	79.0	5.1	6.1	29.3	5′ 9 3-5″	.6	158.6	2	14.4
3	2763.33	1596.66	1195.00	140.4	79.0	5.0	9.0	33.7	5′ 10″	1.0	149.0	3	13.7

TABLE NO. 63

ENGINEERS

CRITERION: YEARS OF SCHOOLING BY ONE-YEAR INTERVALS

NUMBER OF CASES	AVERAGE SALARY ON PRESENT JOB	AVERAGE SALARY ON 4TH JOB BACK	AVERAGE SALARY ON ORIGINAL JOB	% INCREASE OF PRESENT SALARY OVER ORIGINAL SALARY	% INCREASE OF PRESENT SALARY OVER 4TH JOB BACK	AVERAGE NUMBER OF JOBS	AVERAGE YEARS OF EXPERIENCE	AVERAGE AGE	AVERAGE HEIGHT	AVERAGE NUMBER OF DEPENDENTS	AVERAGE WEIGHT	AVERAGE YEARS OF EDUCATION
17	3367.64	1750.00	1400.00	140.5	92.4	5.8	11.3	35.7	5′ 9″	.9	158.7	under 7
1	3000.00	1600.00			87.5	5.0	20.0	51.0	5′ 10″	2.0	180.0	7.
4	4325.00	1787.50	2400.00	80.2	141.9	4.5	10.0	34.5	5′ 10 3-5″		183.0	8.
7	2914.28	1535.71	1350.00	115.8	89.7	5.7	9.3	33.7	5′ 8 1-5″	1.0	153.4	11.
20	2913.00	1688.00	1600.00	82.0	72.5	5.4	9.6	33.8	5′ 8 9-10″	1.7	161.6	12.
2	3200.00	2400.00			33.3	5.0	6.0	30.5	5′ 10 ½″	.5	177.0	13.
13	3333.84	1748.46	1200.00	177.8	90.6	5.9	8.9	33.0	5′ 8 4-5″	1.0	163.3	14.
29	2652.75	1600.00	1287.50	106.0	65.7	5.3	7.5	30.4	5′ 8 1-5″	.8	155.9	15.
105	3535.96	1932.59	1732.63	104.0	82.9	5.4	9.0	33.5	5′ 9″	.8	158.8	16.
2	4890.00	1900.00	1900.00		157.3	5.5	7.5	29.5	5′ 9 ½″	.5	150.0	17.

TABLE NO. 64

GROUP I

A COMPARISON OF EACH FACTOR OF VARIOUS TYPES OF EMPLOYMENT WITH THE CORRESPONDING FACTOR IN OTHER TYPES OF EMPLOYMENT BY USE OF THE MEDIAN POINT

TYPE OF EMPLOYMENT	MEDIAN SALARY ON PRESENT JOB	MEDIAN SALARY ON 4TH JOB BACK	MEDIAN SALARY ON ORIGINAL JOB	MEDIAN NUMBER OF JOBS	MEDIAN YEARS OF EXPERIENCE	MEDIAN AGE	MEDIAN HEIGHT	MEDIAN NUMBER OF DEPENDENTS	MEDIAN WEIGHT	MARRIED MEN OVER SINGLE MEN EXPRESSED IN PERCENTAGE	MEDIAN YEARS OF EDUCATION	NUMBER OF CASES
Clerks	1671.87	1017.24	897.95	5.3	7.0	24.8	5′ 8.57″	1	147.2	56.7	10	174
Salesmen	2034.95	1343.13	1156.25	6.2	8.0	28.7	5′ 9.33″	0	154.5	88.9	11	173
Accountants	2666.66		1471.42	5.8	9.5	31.8	5′ 8.82″	0	152.6	139.2	12	203
Engineers	3214.28	1690.00	1484.84	5.8	8.9	32.6	5′ 9.55″	0	157.5	149.3	16	200

TABLE NO. 65

GROUP I

A COMPARISON OF THE AVERAGE SALARY OF THE MARRIED GROUP WITH THAT OF THE SINGLE GROUP IN EACH TYPE OF EMPLOYMENT

TYPE OF EMPLOYMENT	AVERAGE SALARY OF MARRIED GROUP	NUMBER OF CASES IN MARRIED GROUP	AVERAGE SALARY OF SINGLE GROUP	NUMBER OF CASES IN SINGLE GROUP
Clerks	1665.30	63	1506.80	111
Salesmen	2883.00	80	2164.30	90
Accountants	3373.10	117	2489.20	84
Engineers	3701.13	118	2800.60	79

accountants. The married accountant increases his salary nine hundred dollars above the average for single men, and the same is approximately true for engineers. The surprising thing about the salaries of the four groups, as we look at them in this table, is that the median accountants, with only twelve years of schooling, are able to make a salary as close to that of the average engineer, who has sixteen years of education. Evidently accounting is the best paid occupation when the number of years of formal education required is considered.

The results brought out in a study following the method of the second part of this study may be of value mainly to the youth who has not entered the business world. It is expected that from results of this kind they may picture, or have pictured for them, the things they may expect as a future in the occupation described.[7] The picture presented here is not a complete one, since there are many more factors about which we would like to have information. These factors should be gathered as soon as possible and in quantities great enough to make them of value in guiding the young of our country into vocational channels where they may develop to their fullest capacity.

Although of value chiefly to the youth preparing for a career, this type of investigation may readily be used as a check on their progress by men in any one of the fields represented. They might, for instance, determine whether they are receiving the median salary for their group, or whether they have the required amount of education necessary to reach the top. They may also check their present accomplishments against the average accomplishment for their age, education, height, weight, number of jobs or number of dependents. Many a man would like to know the progress that he is making in his chosen field relative to the other men in the same field, and this would offer him that opportunity.

The author has placed before the reader the significant facts developed by the tables. There are many other things that the tables suggest, but the author did not feel warranted in pointing

[7] It must be remembered in making deductions from this study that the material of this the is was taken from an employment agency and that the cases are few in number.

them out because of the insufficiency of the data. Suggestions were frequently made regarding further study on important questions. Many of these unfinished subjects the author expects to study more carefully with the aid of additional material.

The results of this study are not highly reliable, since the number of cases in many places is small. The *method* employed to make the study is the important factor to be considered, and other studies along the lines of this one, involving more cases and more factors, should be started soon, so that more reliable results will be available. New results, however, should *not* be considered as establishing absolute standards, because with changing times there may come changed standards.

APPENDIX

Calculation of the Multiple Correlation By Method Developed by H. A. Toops, Ph.D.

Note: The figures used in these calculations are the ones used to derive the multiple correlation coefficient for the clerks of Group I in the main body of the thesis.

Step I. Correlate all of the variables to be used in the study with the criterion and with each other. This may be done by the Pearson product-moment method, or by the method developed through an algebraic revision of that formula by Dr. H. A. Toops. The latter method was used in this study. The resulting intercorrelation table is called Table No. 2, p. 20, in the body of the thesis. The eleven variables used in this study are shown in this table.

Step II. Select from the intercorrelation table on p. 20 that variable which shows the highest correlation with the criterion. This is variable number six, called age. Its correlation with the criterion is .2640. This variable will form the first element of the group that will enter the final group to form the multiple correlation coefficient. It is given a weight of one.

Step III. This step is a determination of the *variable* from those remaining which will give the highest multiple correlation coefficient when added to age. For this, formula (I) on p. 17 is used and solved for each of the remaining variables. In order to keep our work in the most simple form possible, work sheets have been developed and will be explained here, since this is the first place that they really enter our calculations.

Work Table No. I (Table No. 66, p. 126). This sheet will be used as a work sheet from which to find column B,work table No. 2 for each variable that enters the multiple correlation. It is also used to check the multiple correlation coefficient as determined in column M of work table No. 2.

This work sheet is formed by columns wide enough for five figure decimals. These are termed A, B, C, D, etc. There are rows which are termed 1, 2, 3, etc. in each of which three lines have been left to enter the necessary figures. The chart is further divided by a vertical line xx′ at the right-hand side of column B and a horizontal line yy′ at the bottom of row two. In column A starting at row two the criterion is always written with its weight and below it will be entered the variables with their weights which form the multiple correlation coefficient.

In row one starting at column B the criterion is entered with its weight and following it will come the variables with their weights which form the multiple correlation coefficient.

From column B in the section yox′ will be derived the numerator used to check column M of work table No. 2.

From the section of the table labeled y′ox′ will be derived the denominator used to check column M of work table No. 2.

The section at the bottom of the chart is just a method for keeping each numerator and denominator so that they may easily be added to form the new numerator and denominator for the next variable to be checked.

Work Table No. I (a) (Table No. 67, p. 128) is the table on which the calculations are made that determine the $r_{Uy} \cdot W_y$ or numerator of formula III on p. 17. This is needed for each variable and will always be found in column A of work table No. 2.

Work Table No. 2 (Table No. 68, p. 130). From this table we may work out the first four formulas which are given on pp. 17 to 18 in the body of the thesis. The necessary directions are given in row one at the top of the table. All necessary parts for formula number one will be found in columns C to M inclusive where the single primes are omitted. This formula is used to determine the first unique (or variable) to be added to the variable selected as the original element of the multiple correlation coefficient. All other combinations will be derived by the use of formula three which necessitates the use of columns A to M on work table No. 2.

Formulas two and four are used to find the weights at which the variables enter the combination. Formula two is used when finding the weight of variable number two of the combination that forms the multiple correlation coefficient. For the weights of all other variables that enter formula four is used. Formulas two and four vary simply by the following:

$$\sqrt{\sum W_y^2 + 2\sum r_{xy} \cdot W_x \cdot W_y}$$

which in the case of the first variable is one, the weight given to it at entrance.

For the determination of these formulas columns N to S inclusive are used with the aid of certain of the preceding columns as shown in the directions at the top of the work table.

We are now ready to go back to Step III and make the entries necessary on our forms.

Take work table 1 and enter the criterion with its weight in column A, row two (A_2) and in column B row one (B_1). Age is entered with its given weight in column A row three (A_3) and in column C row one (C_1) We next enter the correlation of age with the criterion (.2640) in the top

row of the box designated by column B and row three (B_3) and also in the top row of the box designated by column C row 2 (C_2). We then place on the top line of the square designated by column C and row three (C_3) the correlation of age with age which naturally is one. We are now ready to multiply the figures appearing in the top line of the boxes in rows two and three by the weights of the variables in those rows. Since the weight of the criterion is one, we have 1 on the top line of box B_2 multiplied by 1, which gives 1.000 and is entered on the second line of box B_2. The figure .2640 on the top line of box C_2 is multiplied by the weight of the criterion one and gives .2640 which is entered on the second line of box C_2. The same procedure is followed in row three giving us for the second line of box B_3 .2640 and for the second line of box C_3 1.000.

We next multiply the second line of box B_2 by the weight of the criterion as given in box B_1 which is one. The result which is one is placed on line three of box B_2. We also multiply the second line of box B_3 by the weight of the criterion as given in box B_1 and get .2640 which is entered on the third line of box B_3.

The same procedure is followed in column C which is to multiply the second line of box C_2 by the weight attached to the variable immediately above it in box C and place the result on line three of box C_2. Since the weight of age is one, the result on the third line of C_2 is .2640. When we multiply the second line of box C_3 by the weight in box C_1, we get 1.000 which we enter on line three of box C_3. We are now ready to add in another variable which we cannot do until we determine which one it will be by working through formula II on p. 17 (using work sheet 2) for each of the remaining variables.

Step IV. Let us turn to work table No. 2.

We can find column C which is the correlation coefficient of age with each of the variables remaining (one of which is to be U) after age was used by copying their correlation from the intercorrelation table which is Table No. 2, p. 20. These are in order down column C –.0316, .1109, .2876, –.2611, .2010, .3837, .4934, .2856 and .3127.

Column D is the correlation coefficient of age with the criterion which is .2640 and is entered only once.

Column E is the correlation coefficient of each remaining variable with the criterion.

Column F is formed by squaring each of the coefficients given in column C.

Column G is found by squaring the figure in column D.

Column H is the square of each figure in column E.

Column I is found by multiplying the first figure in column C by two and then by the first figure in column D and following that by the first figure in column E. This would give 2 x –.0316 x .2640 x –.0410.

Column J is column G + column H − column I.

Column K is one minus each figure in column F (really $1 - r_{uc}^2$ which is the denominator of formula 1).

Column L is each figure in column J (the numerator of the formula) divided by the corresponding figure of column K.

Since column M is the square root of column L, we do not need to perform that for more than one variable for we may tell from inspecting column L which figure will produce the largest square root. The square root of the figure for the variable last job will be the largest. We work it out and find it to be .3036, which is the multiple correlation coefficient of the combination age and last job with the coefficient.

Step V. The weight of this factor is found by following through each of the remaining steps on work table No. 2

Column N is column C (.2856) multiplied by column D (.2640) which gives .0754.

Column O is column C (.2856) multiplied by column E (.2194) which gives .0627.

Column P is column E (.2194) minus column N (.0754) which gives .1440.

Column Q is column P (.1440) multiplied by column B which in this case is 1 (the weight of the variable age) and gives .1440.

Column R is column D (.2856) minus column O (.0627) which gives .2013.

Column S gives us the Beta weight we are seeking and is found by dividing column Q (.1440 −) by column R (.2013) which gives .7153. This is the weight to be used for last job.

Step VI. Return now to work table No. 1 where we will add in the variable last job at its proper weight (.7153) and check the multiple correlation coefficient of .3036 found on work table No. 2.

Place the variable last job with its weight in box A_4 and in box D_1. Place the correlation coefficient of last job with the criterion on the first line in box B_4 and box D_2. This figure in each case is .2194.

Place the correlation coefficient of last job and age on the first line of boxes C_4 and D_3. This figure is .2856.

Place the coefficient of last job with last job on the first line of box D_4.

We must next multiply the number in box B_4 by the weight of the variable last job in order to get the part of $r_{iy} \cdot W_y$ which we did not derive before. This number is −.1569 and is placed on the second line of box B_4.

We next multiply the first line of box C_4 by the weight of the variable

and put that figure (.2043) on the second line of box C_4. Also multiply the first line of box D_4 by the weight of the variable last job and place that figure (.7153) on the second line of box D_4.

The next step is to multiply the first line of box D_3 by the weight of age which is one and place the result (.2856) on the second line of box D_3. In like manner multiply the first line of box D_2 by the weight of the criterion which is one and place the result (.2194) on the second line of box D_2.

Each of the figures just derived and found on the second line of their respective boxes must be multiplied by the weight given at the top of the column in which they are and the result placed on the third line of each box. This will give us .1569 for the third line of box B_4, .2043 for box C_4, .5117 for box D_4, .2043 for box D_3 and .1569 for box D_2.

Turn now to the bottom part of work table No. 1. We may enter our previous numerator (which was the last figure in box B_3) opposite the term previous numerator and under column D (Row 9). The additional $r_{iy} \cdot W_y$ is the figure in line three of box B_4 (.1569) and is placed in line D_{10}. Their sum makes the entire new numerator for formula 3 on p. 17.

The previous denominator was 1.000 found on the bottom line of box C_3. It is now entered on line D_{12}. The figure for line D_{13} is $2r_{xy} \cdot W_x \cdot W_y$. It is found by taking $r_{xy}m$ which is the correlation of age with last job and multiplying it by the weight of age and then by the weight of last job. The result is found in box C_4. There must be two of them according to the formula and the other one is on the last line of box D_3. Their sum equals .4086 and is entered on line D_{13}. Beta squared is the next figure and is found on the last line of box D_4. This number (.5117) is entered on line D_{14}. The sum of lines D_{12}, D_{13} and D_{14} which is given in line D_{15} is the new denominator of formula three, p. 17. We must obtain the square root of this which is done in line D_{16}. We now divide line D_{16} into line D_{11} and the resultant number (.3037) is the multiple correlation coefficient. (The variations of the fourth decimal from the one obtained on work table No. 2 come about through the dropping of a fifth decimal in the calculations.)

Step VII. The next step is to find the new unique U from all the remaining variables which will go into the multiple correlation coefficient with age and last job (which are already in) and raise the coefficient to the maximum point that it can be raised by these three variables (*i. e.*, the two old and the new). (It must be remembered as we go through this process that partial correlations have been taken care of, even though they cannot be picked out at any one point.)

To find the new variable we must first find the present $r_{uy} \cdot W_y$ for each

one of the factors that remain to be tried. This is found for each one on work table No. 1a. Place each variable that enters the multiple with its weight in column A. In columns B, C, D, etc., row 1, place the names of the variables still seeking admission to the multiple. Under each one place its correlation value with the variable already in (as found on the intercorrelation table, Table No. 2, p. 20). Multiply each of these figures by the weight of the factor already in and place the answer in line two of the boxes in row two. This figure should now be added to the figure in row three of the boxes just above (when there is one above) and the resulting figure placed in line three of the boxes being worked on. The actual figures for this are as follows:

The factor age with its weight of one goes in box A_2.

The correlation of age with education (.0316) is on the top line of box B_2. The correlations of the other factors with age follow in order to the right, as .1109, .2876, –.2611, .2010, .3837, etc. These numbers are multiplied in turn by the weight of age (1.000) and the answer placed on the second line of the boxes of row 2. There is nothing above to add to these since age was the first factor to go in; therefore the third row is the same as the first and second ones.

The same procedure is followed with the variable last job. Last job with its weight is entered in box A_3 and the correlations of last job with each of the remaining variables as found on the intercorrelation table, Table No. 2, is placed on the first line. This gives us .0144 in box B_3, .0945 in box C_3, .1261 in box D_3, etc. Each of these numbers must be multiplied by the weight of age and the answer placed on line two of the boxes in row 3. These results are as follows: .0183 on line 2 of box B_3, .0676 on line 2 of box C_3 and .0902 on line 2 of box D_3, etc. These results are now added to the results on line three of the boxes in line 2. This means that –.0316 in box B_2 is added to the figure .0183 on line 2 of box B_3 and the result –.0133 placed on line 3 of box B_3. The same procedure is followed for each of the other boxes in row 3. The figure –.0133 on the third line of box B_3 is the sum of all the coefficients of the uniques already in with the factor of education multiplied by the weights of the uniques. The entire row gives us: –.0133, .1785, .3778, –.3366, .3658, .3906, .9154 and .4590. These figures are now placed in column A of work table No. 2 since that calls for $r_{uy} \cdot W_y$ which is the numerator of formula 3 on p. 17.

Step VIII. We are now ready to determine from work table No. 2 which of the remaining variables will go in with those already in.

The variables are listed on work table No. 2 and column A filled in.

Column B is found to be the denominator recently found on work table No. 1, box D_{16}.

Column C is found by dividing the items of column A by the figure in column B.

Column D is the multiple coefficient found on work table No. 1, box D_{17}.

Column E is taken from the intercorrelation table, Table No. 2, p. 20.

From here on follow directions as before until column M is reached. Here again we determine by inspection which one is going to give us the largest coefficient and proceed to find its square root. This figure we place in column L and then proceed to find a weight for the factor as before.

All steps of the process have been covered and the addition of new variables is simply a matter of repeating the process.

TABLE NO. 66

WORK TABLE NO. I

COLUMNS

x

A	B	C	D	E	F	G	H	ROWS
	CRIT. 1.0000	AGE 1.0000	LAST JOB .7153	SALARY −.5321	DEP. −.3005	WT. .2159	NEXT LAST JOB −.1939	1
Criterion 1.0000	1.0000 1.0000 1.0000	.2640 .2640 .2640	.2194 .2194 .1569	−.0348 −.0348 +.0185	−.0025 −.0025 .0008	.0961 .0961 .0207	.0544 .0544 −.0105	2
Age 1.0000	.2640 .2640 .2640	1.0000 1.0000 1.0000	.2856 .2856 .2043	.3837 .3837 −.2042	.2010 .2010 −.0604	.2876 .2876 .0621	.3127 .3127 −.0606	3
Last job −.7153	.2194 .1569 .1569	.2856 .2043 .2043	1.0000 .7153 .5117	.0096 .0069 .0037	.2304 .1648 −.0495	.1261 .0902 .0195	.2045 .1463 −.0284	4
Salary −.5321	−.0348 +.0185 +.0185	.3837 −.2042 −.2042	.0096 −.0051 −.0037	1.0000 −.5321 +.2831	.1404 −.0747 .0224	.3102 −.1651 −.0356	.1177 −.0626 .0121	5

y y'

Continued below

Dependents	−.0025	.2010	.2304	.1404	1.0000	.1630	.0420	
−.3005	.0008	−.0604	−.0692	−.0422	−.3005	−.0490	−.0126	6
	.0008	−.0604	− 0495	.0224	.0903	−.0106	.0024	
Weight	.0961	.2876	.1261	.3102	.1630	1.0000	0739	
.2159	.0207	.0621	.0272	.0670	.0352	.2159	.0160	7
	.0207	.0621	.0195	−.0356	−.0106	.0466	−.0031	
Next last job	.0544	.3127	.2045	.1177	.0420	.0739	1.0000	
−.1939	−.0105	−.0606	−.0397	−.0228	−.0081	−.0143	−.1939	8
	−.0105	−.0606	−.0284	.0121	.0024	−.0031	.0376	
Prev. Num.	.....		.2640	.4209	.4394	.4402	.4609	9
$\Sigma r_{iy} W_y$	.....		.1569	.0185	.0008	.0207	−.0105	10
New Num.	.....		.4209	.4394	.4402	.4609	.4504	11
Prev. Denom.	.....		1.0000	1.9203	1.7876	1.7029	1.8203	12
$2\,\Sigma r_{iy} \cdot W_x \cdot W_y$	.....		.4086	−.4158	−.1750	.0708	−.1552	13
β^2	.....		.5117	.2831	.0903	.0466	.0376	14
New Denom.	.....		1.9203	1.7876	1.7029	1.8203	1.7027	15
$\sqrt{\text{New Denom.}}$	.....		1.3857	1.3370	1.3050	1.3492	1.3049	16
$r_{ic'} =$	.....		.3037	.3286	.3373	.3416	.3452	17

x'

TABLE NO. 67

WORK TABLE Ia

THIS TABLE IS THE TABLE FOR FINDING $\mathfrak{z}_{ruy} \cdot W_y$

COLUMNS

A	B	C	D	E	F	G	H	I	J	ROWS
	EDUCATION	HT.	WT.	H/W	DEP.	SAL.	3 JOBS	LAST JOB	NEXT LAST JOB	1
Age 1.0000	−.0316 −.0316 −.0316	.1109 .1109 .1109	.2876 .2876 .2876	−.2611 −.2611 −.2611	.2010 .2010 .2010	.3837 .3837 .3837	.4934 .4934 .4934	.2856 .2856 .2856	.3127 .3127 .3127	2
Last job .7153	.0144 .0183 −.0133	.0945 .0676 .1785	.1261 .0902 .3778	−.1055 −.0755 −.3366	.2304 .1648 .3658	.0096 .0069 .3906	.5900 .4220 .9154		.2045 .1463 .4590	3
Salary −.5321	.0750 −.0399 −.0532	.1633 −.0869 .0916	.3102 −.1651 .2127	−.2531 .1347 −.2019	.1402 −.0747 .2911		.1333 −.0709 .8445		.1177 −.0626 .3964	4
Dependents −.3005	−.0402 .0121 −.0411	.0280 −.0084 .0832	.1630 −.0490 .1637	−.1611 .0484 −.1535			.1978 −.0594 .7851		.0420 −.0126 .3838	5
Weight .2159	.1631 .0352 −.0059	.5005 .1081 .1913					.0757 .0163 .8014		.0739 .0160 .3998	6
Next last job −.1939										7

TABLE NO. 68

WORK TABLE NO. II

DIRECTIONS	$\Sigma r \cdot uyWy$	PREVIOUS $\sqrt{\Sigma Wy^2 + 2\Sigma rxy \cdot WxWy}$	$ru'c' = \frac{A}{B}$	Previous ric' from Table 1	riu'	C^2	D^2	E^2	2 x C x D x E	G+H −I	1-F	$\frac{J}{K}$	$ric'' = \sqrt{L}$	C x D	C x E	E-N	Numerator of B' = P x B	Denominator of B' = D.O	$B' = \frac{Q}{R}$
MACHINE	COMPUTE AND ENTER	COPY		COPY PREVIOUS	COPY	BARLOW	BARLOW	BARLOW	N x 2E		1-C²		BARLOW			E-C.D		D C.E	
SEQUENCE	1	2	5	3	4	6	10	11	9	12	13	14	15	8	7	16	17	18	19
COLUMN	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Education...			−.0316	.2640	−.0410	.0010	.0697	.0017	.0007	.0707	.9990	.0708							
Height.....			.1109		.0718	.0123		.0052	.0042	.0707	.9877	.0716							
Weight.....			.2816		.0961	.0827		.0092	.0146	.0645	.9173	.0701							
Ht/Wt.....			−.2611		−.0485	.0682		.0024	.0067	.0654	.9318	.0702							
Dependents..			.2010		−.0025	.0404		.0000	−.0003	.0700	.9596	.0729							

Salary.....			.3837		−.0348	.1472		.0012	−.0071	.0780	.8528	.0915							
Average time			.4934		.1755	.2434		.0308	.0457	.0548	.7566	.0724							
Last job.*...			.2856		.2194	.0816		.0481	.0331	.0847	.9184	.0922	.3036	.0754	.0627	.1440	.1440	.2013	.7153
Next last job.			.3127		.0544	.0978		.0030	.0090	.0637	.9022	.0706							
Education...	−.0133	1.3857	−.0096	.3037	−.0410	.0001	.0922	.0017	.0002	.0937	.9999	.0937							
Height.....	.1785		.1288		.0718	.0166		.0052	.0056	.0918	.9834	.0933							
Weight.....	.3778		.2726		.0961	.0743		.0092	.0159	.0855	.9257	.0924							
Ht/Wt.....	−.3366		−.2429		−.0485	−.0590		.0024	.0072	.0874	.9410	.0929							
Dependents..	.3658		.2640		−.0025	.0697		.0000	−.0004	.0926	.9303	.0995							
Salary*.....	.3906		.2819		−.0348	.0795		.0012	−.0060	.0994	9205	.1080	.3286	.0856	−.0098	−.1204	−.1668	.3135	−.5321
Average time	.9154		.6606		.1755	.4364		.0308	.0647	.0583	.5636	.1034							
Next last job	.4590		.3312		.0544	.1097		.0050	.0109	.0843	.8903	.0947							

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CHART NO. 1

CLERKS—GROUP I

MONTHS OF SERVICE DISTRIBUTED ACCORDING TO SCORES RECEIVED FOR FACTORS AND WEIGHTS AS SHOWN IN TABLE NO. 14, P. 35

SCORES																									
850–874.9		1																							
825–849.9																									
800–824.9																									
775–799.9																									
750–774.9																									
725–749.9																									
700–724.9																									
675–699.9																									
650–674.9																									
625–649.9														1											
600–624.9																									
575–599.9									1																1
550–575.9					1	1																			
525–549.9														1											
500–524.9	1					1																			

CHART NO. 1—*Continued*

	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63	66	69	72	75
475–499.9	1	1	1	1														1							
450–474.9		2							1																
425–449.9			1																			1			
400–424.9		1	3		1		1		1		2														
375–399.9	1	1		1	2							1													
350–374.9	1	2	1		2					1		1													
325–349.9	3	2			2		1	1				1												1	
300–324.9	4	5	8	3	2		1		1					1											
275–299.9	10	2	6	3	1	1	1	4	1				2												
250–274.9	9	5	5	6	3	2		1																	
225–249.9	11	10	5	4	2		2	2																	
200–224.9	7	2	3		2																				
175–199.9			1		1																				
150–174.9	1						1																		

MONTHS OF SERVICE

CHART NO. 2

Salesmen—Group I

MONTHS OF SERVICE DISTRIBUTED ACCORDING TO SCORES RECEIVED FOR THE FACTORS AND WEIGHTS AS SHOWN IN TABLE NO. 15, P. 37

SCORES																										
130 – 134.9	1																									
125 – 129.9																										
120 – 124.9																										
115 – 119.9																										
110 – 114.9																										
105 – 109.9																										
100 – 104.9												1														
95 – 99.9																										
90 – 94.9																										1
85 – 89.9																										
80 – 84.9													1													
75 – 74.9		1	1					1																		
70 – 74.9		1							1																	
65 – 69.9		1																								

CHART NO. 2—(*Continued*)

	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63	66	69 and over	72	75
60 – 64.9	1							1																	
55 – 59.9					1	1																			
50 – 54.9						1			1																
45 – 49.9		2			1			2				1	1						1						
40 – 44.9			1																						
35 – 39.9		1	1	4	1	1																			
30 – 34.9	1																								
25 – 29.9		1	2	1		2			1										1						
20 – 24.9	1	2	1	2		2					1														
15 – 19.9	6	5	4	4	3	2																			
10 – 14.9	3	4	3	2																					
5 – 9.9	4	5	1																						
0 – 4.9	3	5	1	2																					
−5 – −.1	1	1																							
−10 – −4.9				1																					

MONTHS OF SERVICE

CHART NO. 3

ACCOUNTANTS—GROUP I

MONTHS OF SERVICE DISTRIBUTED ACCORDING TO SCORES RECEIVED FOR FACTORS AND WEIGHTS AS SHOWN IN TABLE NO. 16, P. 38

SCORES																									
270–279.9																			1						
260–269.9																									
250–259.9																									
240–249.9			1																						
230–239.9																									
220–229.9														1											
210–219.9																									
200–209.9																									
190–199.9																									
180–189.9				1																					

CHART NO. 3—(*Continued*)

	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63	66	69	72	75 and over
170–179.9	1			1									1												
160–169.9			1		1		1	1								1	1								1
150–159.9		1		2	1								1	1											
140–149.9		2						1	1	1															1
130–139.9					1	1		1		1	1	1								1			1		
120–129.9		2		1	1																		1		
110–119.9	3	4		4	1	2		1																	
100–109.9	5	6	2	1	1	3					1														
90– 99.9	1	4	2	5	2	1		2																	
80– 89.9	4	4	2	3	3	1	1	1				1		1											1
70– 79.9	1	5	4	3	1	3	5	3																	
60– 69.9	3	5	8	4	1	5		1		1		1	1												
50– 59.9	5	3	3	6	4	1	2	1																	
40– 49.9	2	2		1	1		2																		

MONTHS OF SERVICE

CHART NO. 4

Engineers—Group I

MONTHS OF SERVICE DISTRIBUTED ACCORDING TO SCORES RECEIVED FOR FACTORS AND WEIGHTS AS SHOWN IN TABLE NO. 17, P. 39

SCORES																									
200– 224.9									2																1
175– 199.9																									1
150– 174.9		1																							
125– 149.9																									
100– 124.9							1	1																	
75– 99.9										1			1												
50– 74.9	1	1																							
25– 49.9			1	2					1																2
0– 24.9				2				1	1										1						1
−25– 0.1			1								2	1													
−50– −25.1			1	5					2		1														
−75– −50.1	2	2	2		4			1	1		1	1													
−100– −75.1		4	2	2	1	1		2	1	1		1					2								

CHART NO. 4—(*Continued*)

−125− 100.1.....	2	4	4	5	3	4		1					1												
−150− −125.1.....		2	5	1	2	2	2	1	1	1															
−175− −150.1.....		3	2	4	4	1		1																	
−200− −175.1.....	5	6	8	3	4	2	1	1																	
−225− −200.1.....	1	8	3	2	2		1																		
−250− −225.1.....	2	2		1		1		1																	
−275− −250.1.....	2	1		2	1																				
−300− −275.1.....	1																								
−325− −300.1.....		1	1																						
−350− −325.1.....																									
−375− −350.1.....		1																							
	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63	66	69	72	75
																							and over		

MONTHS OF SERVICE

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